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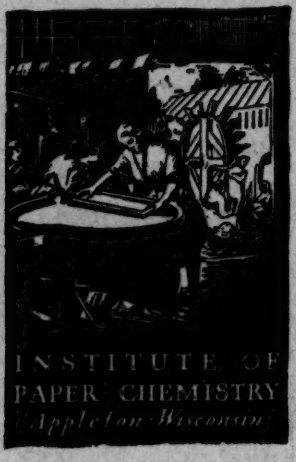
BULLETIN

OF

THE INSTITUTE OF PAPER CHEMISTRY



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Volume 23 Number 4

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Books and Pamplets Added to the Library During November

CHEMISTRY—PERIODICALS—BIBLIOGRAPHY

AMERICAN CHEMICAL SOCIETY. List of periodicals abstracted by *Chemical Abstracts* with key to library files and other information. Columbus, Ohio, The Society, 1951. 255 p.

PFLÜCKE, MAXIMILIAN, und HAWELEK, ALICE, ed. Periodica chimica; Verzeichnis der im *Chemischen Zentralblatt* referierten Zeitschriften mit den entsprechenden genormten Titelabkürzungen. 2. neubearb. Aufl. Berlin, Akademie Verlag, etc. 1952. 411 p.

CHEMISTRY—TABLES

LANGE, NORBERT ADOLPH, comp. and ed. Handbook of chemistry; a reference volume for all requiring ready access to chemical and physical data used in laboratory work and manufacturing. Assisted by Gordon M. Forker. 8th ed. Sandusky, Ohio, Handbook Publishers, 1952. 1998 p.

CHEMISTRY, ANALYTIC—QUANTITATIVE

KOLTHOFF, I. M., and SANDELL, E. B. Textbook of quantitative inorganic analysis. 3d ed. New York, Macmillan [c1952] 759 p.

CHEMISTRY, ORGANIC

PROGRESS in organic chemistry. Editor, J. W. Cook. New York, Academic Press; London, Butterworths Scientific Publications, 1952. v. 1. 287 p.

ECONOMICS

HANSON, J. L. Economics for students. London, Macdonald and Evans, 1950. 208 p.

FIBERS

CARPENTER, CHARLES H., and LENEY, LAWRENCE. 382 photomicrographs of 91 papermaking fibers. [Rev. ed.] Syracuse, State University of New York, College of Forestry, 1952. 152 p.

FRESH-WATER BIOLOGY

LAGLER, KARL F. Freshwater fishery biology. 1st ed. Dubuque, Iowa, Wm. C. Brown Company [c1952] 360 p.

GLUCOSIDES

MCILROY, R. J. The plant glycosides. London, Arnold [1951] 138 p.

HARD WOODS

VILARS, M. Etude pour l'obtention de pâtes à partir des bois feuillus français; rapport. Commission d'Etude des Bois Feuillus, 1951-52. 2 v. 113 p.

INSULATION (HEAT)

AMERICAN SOCIETY FOR TESTING MATERIALS. Symposium on thermal insulating materials. Cincinnati Spring Meeting, March 7, 1951. Special technical publication no. 19. Philadelphia, The Society [c1952] 57 p.

OXIDATION

LATIMER, WENDELL M. The oxidation states of the elements and their potentials in aqueous solutions. 2d ed. New York, Prentice-Hall, 1952. 392 p.

PACKAGING

MODERN PACKAGING encyclopedia, 1953. New York, Packaging Catalog Corporation, c1952. 757 p.

ZWEITER deutscher Verpackungskatalog. Berlin-Grunewald, arani Verlags-GmbH [1952] 497 p.

TEXTILE INDUSTRY AND FABRICS

CHURCH, JAMES M. Fundamental studies of chemical retardants for the fire resistant treatment of textiles. Office of the Quartermaster General. Military Planning Division. Research and Development Branch. Textile series report no. 38. [Washington] Office of Technical Services, 1952. 299 p.

TRADE DIRECTORIES

CHEMICAL ENGINEERING CATALOG, 1952-53. 37th ed. New York, Reinhold, c1952. 2075 p.

LOCKWOOD'S directory of the paper and allied trades. 78th ed., 1953. R. E. Thuemmes, editor. New York, Lockwood Trade Journal Co., c1952. 1548 p.

WATER—POLLUTION

GREAT BRITAIN. *Department of Scientific and Industrial Research. Water Pollution Research Board.* Report of the Water Pollution Research Board, with the report of the director of Water Pollution Research for the year 1951. London, H. M. Stationery Office, 1952. 56 p.

WOOD—CHEMISTRY

WISE, LOUIS E., and JAHN, EDWIN C., ed. Wood chemistry. 2d ed. New York, Reinhold, 1952. v. 2. p. 691-1343; *cf.* B.I.P.C. 23: 157.

Survey of Periodical Articles

The following are abstracts of opinions expressed by writers in the technical journals. The Institute of Paper Chemistry takes no responsibility for the opinions here summarized.

ACID PLANT

ANDERSON, OSCAR E. Sulphite pulp acid making systems. Paper Trade J. 135, no. 20: 161-4 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 301.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 4 tables and 2 diagrams. E.B.

BARSALOU, MARCEL J. Cooking acid preparation in the sulfite process. Paper Trade J. 135, no. 20: 135-8, 141-52 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 301.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 table, 23 figures, and 12 references. E.B.

GRIFFEE, DONALD. Sulfite acid preparation. Paper Trade J. 135, no. 20: 157-61 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 301.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 4 diagrams. E.B.

ADHESIVES—TESTING

WITTCOFF, HAROLD, and PEERMAN, DWIGHT. Evaluation of heat-seal adhesives. Modern Packaging 26, no. 3: 135-40 (November, 1952).

Laboratory procedures for applying resin-based adhesive coatings (especially heat-seal) to the preliminary evaluation of adhesive properties are discussed. The determination of film properties is described, including appearance, offset properties, blocking, heat-seal temperature, heat-seal range, ability to seal to various surfaces, and aging characteristics of the bond. The physical forms and commercial coating methods of hot-melt, lacquer, and water-dispersed adhesives, organosols, and plastisols are presented as basic information to the laboratory work. An apparatus for determining the heat-seal range of adhesives is described and illustrated. 1 table and 5 figures. L.C.

AIR CONDITIONING

WERTHEIM, FRANKLIN C. Humidification; its effect in the printing industry. Printing Equip. Engr. 83, no. 2: 15-16 (November, 1952); *cf.* B.I.P.C. 23: 3.

The troubles encountered by all users and converters of paper and board stock are discussed briefly, as well as the reason (low humidities) why they occur. Different systems for the controlled humidification of the air in printing and converting plants and the advisability of their installation are considered. 5 illustrations. E.S.

ALCOHOL

SAMUELSON, OLOF, GABRIELSON, GUNNAR, and HARTLER, NILS. The distillation of alcohol from fermented spent sulfite liquor. Svensk Papperstidn. 55, no. 16½: 613-19 (Kongressnummer, Sept. 4, 1952). [In Swedish; English and German summaries]

The distillation of alcohol during the evaporation of the fermented spent liquor was studied and formulas were derived which make it possible to calculate the theoretical alcohol yield. The liquor-vapor equilibrium is discussed, and equations for the calculation of the equilibrium at subatmospheric pressures are given. In conclusion, the recovery of alcohol in full-scale operation has been studied in two evaporator plants, and the results are compared with those which were calculated according to the methods presented in this article. When standard evaporators are used, the agreement was found to be very good; with more elaborate constructions, the results were less satisfactory. 2 tables, 6 figures, and 12 references. E.S.

ALKALINE PROCESSES

BRAINERD, F. W. Kraft pulping. Paper Trade J. 135, no. 20: 203-8 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 302.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 flowsheet. E.B.

CARLIN, T. J. Kraft pulping. Paper Trade J. 135, no. 20: 197-8, 200-2 (Nov. 14, 1952). *cf.* B.I.P.C. 21: 302.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. It is not identical with the previous reference. 2 figures and 1 flowsheet. E.B.

FIELD, HAROLD L. Soda pulping. Paper Trade J. 135, no. 20: 190-7 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 302.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. E.B.

MORRISON, FRANCK. Soda pulping. Paper Trade J. 135, no. 20: 184-9 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 302.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. E.B.

NOLAN, W. J., and BROWN, W. F. Studies in continuous alkaline pulping. II. High yield cellulose pulp from scrub oaks. Tappi 35, no. 11: 505-10 (November, 1952); *cf.* B.I.P.C. 23: 83-4.

Further data are presented on continuous pulping involving presteaming and shredding of chips followed by pulping at substantially constant liquor concentration and steam pressure. The wood pulped was scrub turkey oak, processed for the purpose of obtaining high α-cellulose, low pentosans pulps with no attempt to produce high physical strength. Liquor concentrations from 20 to 80 grams per liter, steam pressures from 115 to 170 p.s.i.g. and cooking times from 10 to 40 minutes were studied. A definite relationship has been found between the concentration of cooking liquor and the percentage of pentosans in the pulp. Concentrations of 80 grams of sodium oxide per liter will produce pulps containing 2 to 3% pentosans, whereas concentrations of 20 grams per liter will produce pulps with 9 to 11% pentosans. Steam pressure and cooking time have only a slight effect on

pentosans content. Presteaming for 10 minutes at 170 p.s.i.g. steam pressure in dilute sodium carbonate solution removes about 25% of the pentosans in the original chips. The ratio of pentosans removed to total wood removed by alkaline presteaming appears to be about the same as in acid steaming at 4.5 pH. Yield, lignin, pentosans, and α-cellulose percentages in pulp may be closely controlled by specification of the pulping variables. A pulp of 45.3% yield, 2.6% lignin, 92.2% α-cellulose, and 8.8% pentosans can be produced in 15 minutes at 148 p.s.i.g. and 35 grams per liter. Another pulp of 40.0% yield, 1.5% lignin, 96.6% α-cellulose, and 2.2% pentosans can be produced in 10 minutes at 148 p.s.i.g. and 80 grams per liter. The α-cellulose content may be controlled closely at any value between 85 and 95%, depending on conditions used. It is estimated that 90% of the α-cellulose in the original wood may be recovered in the pulp. No data on viscosity, D.P. numbers, or alkali purification are included in this study. Pulps sent to a rayon manufacturer were reported to have a D.P. number of 1250 after bleaching, which was reduced to 990 after further purification with hot alkali. The data indicate that turkey oak can be readily converted into high-grade dissolving pulp by continuous cooking. 2 tables, 4 figures, and 4 references. E.S.

ALKALINE PROCESSES—RECOVERY

COULTER, J. H., JR. Sulfate recovery units. Paper Trade J. 135, no. 20: 210-15 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 302.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 table and 7 figures. E.B.

MAY, MALCOLM N. Chemical reaction equilibria in the combustion of sodium-base pulping liquors. Tappi 35, no. 11: 511-17 (November, 1952).

This investigation has been devoted to a study of the chemical reaction equilibria in the combustion of sodium-base pulping liquors. Thermodynamic principles were employed to calculate the equilibria in certain basic reactions involving all the compounds which might be expected to exist in a sodium-base system under recovery conditions; from these basic reactions other reactions of interest were derived, and their equilibria were computed. As a result of these computations, it has been shown why the usual products are obtained in the kraft recovery process; a new process for the recovery of chemicals in the neutral sulfite or sodium-base acid sulfite process has been demonstrated; and a possible explantation for the explosion difficulties sometimes encountered in the dissolving of a kraft furnace smelt has been suggested. 4 tables, 6 figures, and 5 references. E.S.

OWENS, VINCENT P. Chemical recovery unit. Paper Trade J. 135, no. 20: 215-29 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 302.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 5 tables and 24 figures. E.B.

ALUMINUM

ANON. Aluminum foil in the packaging economy; review following a visit to the Aluminium-Walzwerke Singen. Verpackungs Rundschau no. 8: 289-93 + 1 sample sheet; no. 9: 341-6 + 1 sample sheet; no. 10: 381-4 (August-October, 1952). [In German]

The manufacture of aluminum foils, their properties and advantages, technical data, and the manifold applications in the packaging of foodstuffs, tobacco and cigarettes, in the chemical and pharmaceutical industries and many others, and in the conversion of paper and board are described. 2 tables, 46 illustrations, 2 sample sheets (one with 9 different specimens), and 2 references. E.S.

ASSOCIATIONS

AMERICAN PAPER CONVERTER. Brief histories of paper converting associations. Am. Paper Converter 26, no. 11: 21-6 (November, 1952).

Short histories are given of the following converter groups, listed by pages: The Paper Napkin Association, Inc., p. 21; Paper Plate Association, Inc., p. 21-2; Envelope Manufacturers Association of America, p. 22; The Paper Bag Institute, Inc., p. 22-3; The Tissue Association, Inc., p. 23; Waterproof Paper Manufacturers Association, p. 23-4; The Glassine & Greaseproof Manufacturers Association, p. 24; National Stationery and Office Equipment Association, p. 24; Coated and Processed Paper Association, p. 24-5; The Gummed Industries Association, Inc., p. 25; Paper Stationery and Tablet Manufacturers Association, p. 25-6; Label Manufacturers National Association, Inc., p. 26; Specialty Paper and Board Affiliates, p. 26; Vegetable Parchment Manufacturers Association, p. 26. L.C.

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. *Southeastern Section.* [Granting of charter] Tappi 35, no. 11: 123-8A (November, 1952); Southern Pulp Paper Manuf. 15, no. 11: 50-1, 53 (November, 1952).

The Southeastern Pulp and Paper Society became the Southeastern Section of the Technical Association of the Pulp and Paper Industry at its charter meeting on September 19-20, 1952. The following addresses were presented: Macdonald, R. G. TAPPI in the Southeast (charter address), p. 123-4A (see also: Southern Pulp Paper Manuf. 15, no. 11: 58, 60 [November, 1952]); Hatch, Raymond S. Research in the pulp and paper industry, p. 125-6A (see also Southern Pulp Paper Manuf. 15, no. 11: 60-1, 88 [November, 1952]); and Nicholson, Gunnar, W. E. The southern pulp and paper industry and the technologist, p. 126-8A (see also Southern Pulp Paper Manuf. 15, no. 11: 54, 56-7 [November, 1952]; Paper Mill News 75, no. 46: 49, 156 [Nov. 15, 1952]). E.S.

BAGASSE

ANON. Bagasse for boxes. Fibre Containers 37, no. 10: 48 (October, 1952).

The developments which resulted in the construction of the Paramonga Paper Mill in Peru are described, as well as the process employed for pulping bagasse, and the products which are manufactured. The suitability of corrugated board from bagasse for shipping containers is stressed. 1 illustration. E.S.

ANON. Government tests bagasse. Newsprint Service Bur. Bull. no. 416: 5, 8 (September, 1952); Tappi 35, no. 11: 92A, 94A (November, 1952); *cf.* B.I.P.C. 23: 159.

Reference is made to the economical and practical studies at the National Bureau of Standards under authority of a congressional subcommittee for

investigating the possibility of making substitute newsprint from bagasse; *cf.* also Chem. Eng. News 30, no. 47: 4924 (Nov. 24, 1952). 1 table. E.S.

ANON. Paper can be made from bagasse. Pulp Paper Mag. Can. 53, no. 11: 83-6 (October, 1952); *cf.* B.I.P.C. 22: 808-9.

Since 1939 the W. R. Grace & Co. paper mill at Paramonga, Peru has increased production 500%, reaching 19,000 tons of paper in 1951, of which 70% was from bagasse pulp. The mill produces a variety of products from four pulp qualities, providing the Peruvian market and a few surrounding countries with moisture-resistant multiwall bags, kraft wrapping paper, corrugated cartons, paper sacks, and newsprint. Small-scale production of fully bleached pulps has been undertaken recently, and future plans call for expansion in this field. The processes employed by the Paramonga mill are described. For the most part, standard pulp and paper equipment is used with some modification in method rather than machinery. The development of the Peruvian mill is sketched from the first commercial-scale bagasse trial operation at Whippany, N.J. to the present operation in the main sugar-producing area of Peru. The utilization of bagasse, hitherto used only as fuel by sugar refineries, as a raw material for paper has been found economically feasible only where the cost of substitute fuel for the refineries is not prohibitive. The quality of bagasse products has proved equal and in some properties superior to wood-pulp paper and board. The entire article is printed on a sample insert of bagasse printing paper, a 64-lb. stock from the Paramonga mill. 5 illustrations. L.C.

CELLER, EMANUEL, and PERRY, HENRY J. Mr. Celler gives his opinion on bagasse. Paper Trade J. 135, no. 22: 12, 14, 33-4 (Nov. 28, 1952); *cf.* B.I.P.C. 23: 159.

In a letter to the editor, Representative Celler points out the discrepancies between a recent article on bagasse by J. E. Atchison and a subsequent report presented by the Secretary of Commerce to the bagasse subcommittee. The article says that the removal of pith is necessary for the manufacture of bagasse newsprint and that, all in all, newsprint affords a poor opportunity for the utilization of bagasse; the government report maintains the opposite view. Perry attempts to answer these objections and in so doing raises several other controversial questions. He is further answered by Celler. No conclusions are drawn. L.C.

BANANA FIBER

ANON. Banana stumps found suitable paper base. Foreign Commerce Weekly 48, no. 19: 15 (Nov. 10, 1952).

The Handmade Paper Research Center of the Indian government at Poona, Bombay State reports that excellent kraft paper can be made from banana stumps; a special formula employs a mixed furnish of 60% banana-stump and 40% jute pulp. However, the transportation difficulties of the wet stumps for large industrial production make it advisable to develop the manufacture of kraft paper from this source as a cottage industry. E.S.

BARK

KURTH, E. F. Chemicals from Douglas-fir bark. J. Forest Products Research Soc. 1, no. 1: 98-102 (September, 1951).

The author records the investigation carried out during the past two years on extractives and shows the commercial value of these products (tannin, wax, dihydroquercetin, and quercetin). 7 references. R.G.K.

VAN BECKUM, WILLIAM G. Utilization of bark. J. Forest Products Research Soc. 2, no. 3: 55-7 (September, 1952).

The Silvacon products obtained from Douglas-fir bark and their diversified uses are discussed. R.G.K.

BEATING

HERBOLZHEIMER, FRED, JR. Stock preparation. Paper Trade J. 135, no. 20: 290, 292, 294-301 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 303.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 10 diagrams. E.B.

TEXTOR, C. K. Beating and refining. Paper Trade J. 135, no. 20: 281-2, 284-90 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 303.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 7 illustrations. E.B.

BIOGRAPHY

ANON. John Rudolphus Booth. Pulp Paper Mag. Can. 53, no. 11: 88-92 (October, 1952).

The article is a character sketch of J. R. Booth who, in the early 1900's, built an industrial empire in Canada as an entrepreneur in lumber, railroads, and pulp and paper. Personal anecdotes as well as illustrations of his business methods and accomplishments are given. L.C.

BIRCH

PERILÄ, OLAVI, and SEPPÄLÄ, EINO. The effect of *Fomes nigricans* Fr. on birchwood and the papermaking properties of the resulting sulfite pulp. Paper and Timber (Finland) 34, no. 10: 359-65 (October, 1952). [In Finnish; English summary]

Interest in the pulping of hardwoods, birch (I) in particular, is increasing in Finland. However, (I) is rather susceptible to decay, and affected wood occurs rather frequently. The most common stem rot is the black-tinder fungus (*Fomes nigricans* Fr.). The purpose of the present investigation was the study of the effect of this fungus on the papermaking properties of sulfite pulp prepared from affected (I). On the basis of analyses of decayed wood, it can be concluded that the fungus consumes preferably the easily hydrolyzable carbohydrates and cellulose, and lignin only to a lesser extent. The residual cellulose is comparatively undamaged at the primary stage of decay. In lignin, on the other hand, considerable changes have occurred, which indicate that it has possibly either been liberated partly from its chemical or other bonds in wood or that depolymerization has taken place. In sulfite cooking, the lignin of decayed (I) dissolved more difficultly than that of sound wood. This supports the concept that lignin has been liberated by the action of decay, whereupon it can easily be condensed. In this respect the decay seems to have a similar influence on sulfite cooking as an acidic pretreatment. As a result of decay, the strength and ability to resist mechanical treatment of the cellulose fibers have decreased considerably, whereas the cellulose molecules themselves do not appear to have been damaged to any great degree, at least not in the first stage of decay. Decayed wood darkens the color of the pulp appreciably, but it can be bleached satisfactorily; however, the chlorine requirement is higher than in the case of normal pulp. In

the manufacture of unbleached paper pulp, the detrimental effect of decay on the color of the pulp rather limits its possible uses. When bleached pulp is produced, decayed wood can be used only for those paper grades in which high strength is not important. Decayed wood decreases particularly the tear and folding strength; even without the effect of decay, these properties are much poorer in (I) pulp than in that prepared from coniferous wood. 4 tables, 14 diagrams, and 16 references. E.S.

BLEACHING

BARKER, E. R., JR. Chlorine bleaching. Paper Trade J. 135, no. 20: 253-4, 256-7 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 304.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 illustration and 1 reference. E.B.

COUSINS, JOHN C. Chlorine bleaching. Paper Trade J. 135, no. 20: 258, 260 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 304-5.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 2 figures. E.B.

MCEWEN, ROBERT L. Peroxide bleaching. Paper Trade J. 135, no. 20: 244, 246-52 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 305.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 9 figures and 118 references. E.B.

REICHERT, J. S. Peroxides. Paper Trade J. 135, no. 20: 230-43 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine; the article is in three parts: (I) manufacture, properties and uses; (II) applications in the pulp and paper industry; and (III) chemist and chemical engineer at work. 30 figures. E.B.

BOARD

RUNCKEL, W. J. The wet continuous process of hardboard manufacture. J. Forest Products Research Soc. 2, no. 3: 60-1 (September, 1952).

The author shows the advantages of the continuous system over the batch-type hardboard production, with particular reference to the Fourdrinier type of forming as practiced by the Oregon Lumber Co. at Dee. R.G.K.

STORDALEN, KJELL N., and BOLLERSLEV, CARL. The wet batch process of hardboard manufacture. J. Forest Products Research Soc. 2, no. 3: 58-9 (September, 1952).

The authors describe the production of hardboard by the Chapman process, specifying Douglas-fir slabs as raw material. R.G.K.

TURNER, DALE H. Features of the hardboard industry in Scandinavia and their application to United States developments. J. Forest Products Research Soc. 2, no. 3: 62-4 (September, 1952).

The author presents the differences in economic and technological con-

ditions between the Scandinavian countries and the United States as they relate to the production of hardboard. 2 figures and 3 references.
R.G.K.

BOARD—COATED

IRVINGTON VARNISH AND INSULATOR COMPANY. *Cap-Seal Division, Newark, N.J.* Paper coating method. Modern Plastics 30, no. 3: 230, 232 (November, 1952).

A new process for coating paperboard with almost any type of resin has been developed to do the same job as film-laminated board at 20 to 25% less cost. Any paperboard from 2- to 70-mils in thickness, if it is flexible enough for rewinding, can be processed, as can 2-mil or heavier vinyl web, foil, or asbestos. Cellulose derivatives, vinyls, polystyrene, polyethylene, saran, and possibly urea may be applied by either an emulsion or solvent system. The company is investigating the wide variety of uses of this coating method both for packaging and for paper specialties. L.C.

BOARD—CONVERSION

ANON. Fort Wayne builds new Rochester plant. Fibre Containers 37, no. 10: 34, 36-8, 43-4, 46 (October, 1952).

The new shipping-container plant of the Fort Wayne Corrugated Paper Co. at Rochester, N.Y., its efficient layout, and the important installations are described. The plant replaces facilities used since 1939 in Rochester; it is equipped with a corrugator, printer-slotters, and a variety of other boxmaking equipment, which were either completely rebuilt or newly purchased. The linerboard and corrugating medium are shipped from the company's board mill at Port Wentworth, Ga. 1 floor plan and 17 illustrations.
E.S.

ANON. South West Box expands. Fibre Containers 37, no. 9: 34, 36, 41 (September, 1952); *cf.* B.I.P.C. 23: 204.

The expansion and improvement program of the South West Box Co., Sand Springs, Okla. is outlined; the major installation is a new Langston corrugator. A new Stein-Hall starch-preparation system to supply the new corrugator with adhesive was also added. Details of the new installations are given. 6 figures. E.S.

BOARD, CORRUGATED

ANON. The terminology of corrugated board. Allgem. Papier-Rundschau no. 20: 908-9 (Oct. 27, 1952). [In German]

Definitions for corrugated paper (a fluted sheet not pasted to a facing), corrugated board (a fluted sheet pasted to either one [single-faced] or two facings [double-faced]), and double-wall corrugated board (two fluted members between three liners) are given. No term exists yet for a new American development which consists of a double-faced board with a double laminated medium of considerable stiffness. 4 figures and 2 footnotes. E.S.

BOARD, INSULATING

ANON. Wonders from waste. Dow Diamond 15, no. 5: 13-17 (October, 1952).

A brief outline of the development of the insulating-board industry in

America, which is based on wood and agricultural wastes is presented, and reference is made to some of the Dow chemicals used as preservatives in the manufacture of the boards. 14 illustrations. E.S.

MARTINSON, MARTIN. The use of the rejects from the coarse screening of groundwood mills; a new insulating material for the building industry. Svensk Papperstidn. 55, no. 19: 727-33 (Oct. 15, 1952). [In Swedish]

The author recommends the complete removal of the rejects (I) obtained after the coarse screening stage in groundwood mills and their utilization for the manufacture of insulating board. (I) consist principally of sapwood whose chemical, physical, and mechanical properties have been altered during storage; the same type of wood gives trouble during sulfite cooking. When returned to the papermaking process, the refining of (I) requires a high energy consumption, and the resulting product deteriorates the paper quality. According to a method developed by the author (Swedish patent 135,719), (I) are washed clean from adhering good fibers (this is an important step, because the fibers acceptable for papermaking deteriorate the quality of the insulating board), mixed with cement, pressed, and dried. When (I) obtained on grinding stored wood are utilized, no further comminution is required. (I)—which usually amount to 0.5-4% of the wood—may be pressed and stored for several years before use. The properties of the "Optima" boards and suitable applications are described. 1 table, 8 figures, and 3 references. E.S.

WALTON, A. T. How insulating board products are made by the Simpson Logging Company. J. Forest Products Research Soc. 1, no. 1: 91-4 (September, 1951).

A detailed account of the process of making insulating board products at the Shelton plant of the company is given. R.G.K.

BOARD MILLS

ANON. New 100 ton paper mill in Oklahoma built by Certain-teed Products. Paper Mill News 75, no. 48: 8-15 (Nov. 29, 1952); *cf.* B.I.P.C. 23: 86-7.

A similar description of the new board mill of the Certain-teed Products Corp. near Pryor, Okla. is given as in the previous reference. 1 flowsheet and 24 illustrations. E.S.

FIBRE CONTAINERS. National Gypsum's Oklahoma mill. Fibre Containers 37, no. 10: 50, 55-6, 58 (October, 1952); *cf.* B.I.P.C. 22: 730.

An illustrated description of the new board mill at Pryor and its equipment is presented. 18 illustrations. E.S.

BOARD SIZING

PEROT, J. J. Asphalt emulsion sizes for paperboard. Fibre Containers 37, no. 10: 74-5 (October, 1952).

The suitability of asphalt-emulsion sizes (particularly Flintsize 33C for high-speed, cylinder-machine operation and Flintsize 140B for wet-lap machine products), their advantages in V-board manufacture, and correct methods of application are outlined briefly. 1 table. E.S.

BOARD SPECIALTIES

CONTAINER CORPORATION OF AMERICA. "Flat head." Am. Boxmaker 41, no. 9: 19 (September, 1952); Packaging Parade 20, no. 238: 117 (November, 1952).

The company will manufacture and sell a new low-cost paperboard window and counter display for men's, women's, and children's hats. Invented by Ad Reinsberg, the die-cut cylindrical hat stand assumes the three-dimensional appearance of a human head when assembled, but is shipped flat and can be manufactured on folding cartonmaking equipment. 3 illustrations. L.C.

OSWALD, K. H. New types of bottle carriers. Neue Verpackung 9, no. 5: 258-9 (September, 1952). [In German]

A cardboard bottle carrier for four, six, or more bottles, a German development, is described and illustrated. 4 figures. E.S.

BOARD TESTING—CHEMICAL

KNODEL, L. ROBERT, and ELVIN, EVERT J. Infrared determination of biphenyl in treated fiberboard cartons. Anal. Chem. 24, no. 11: 1824-6 (November, 1952).

A quantitative analytical method for determining the biphenyl content in fiberboard cartons impregnated with Phenodor X (a commercial product consisting principally of biphenyl and petroleum wax) is described; it utilizes the 14.34μ absorption peak of biphenyl in the infrared region. The procedure for extracting the biphenyl with carbon tetrachloride and the method for calculating its concentration in the solution are described. 1 table, 3 figures, and 2 references. E.S.

CELLULOSE

DOUGLAS, IRWIN B. Chemistry of cellulose and wood. Paper Trade J. 135, no. 20: 94-6, 98-101 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 309.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. It is identical with the previous reference. 13 figures and 17 references. E.B.

HEUSER, EMIL. The present status of the chemistry of cellulose. Tappi 35, no. 11: 481-9 (November, 1952); *cf.* B.I.P.C. 23: 87.

This is essentially a more complete form of the somewhat abridged preceding reference. Cellulose chemistry is discussed under the headings: faster-splitting bonds; effect of amorphous to crystalline ratio upon the rates of reactions; the nature of the hypothetical faster-splitting bonds; acetolysis and oligosaccharides; hydrolysis and fine structure; microbiological (enzymic) hydrolysis; molecular weight; end-group assay; polymolecularity and physical properties; cellulose derivatives; alkali cellulose; oxidation; reductic acid from oxycelluloses; and use of radioactive isotopes. 165 references. L.C.

MEYER, KURT H. The constitution and texture of native cellulose. Melliand Textilber. 33, no. 6: 485-8 (June, 1952). [In German]

A critical review of the present knowledge of the constitution and structure of native cellulose is given, with particular reference to electron-microscopic evidence. 1 table, 10 figures, and 24 references. E.S.

CELLULOSE—DEGRADATION

SPURLIN, H. M. The homogeneous degradation of cellulose. Textile Research J. 22, no. 10: 693 (October, 1952); *cf.* B.I.P.C. 22: 898-9.

With reference to the article by Bauer and Pacsu published under this title, the author questions that any cellulose dispersion in phosphoric acid is a true solution; he recommends the application of independent checks (high-speed centrifugation, flow birefrigence, electron microscopy, and light scattering) to solutions obtained by workers in the field of homogeneous cellulose hydrolysis to make sure that these are actually molecularly dispersed. E.S.

CELLULOSE—SORPTION

TAYLOR, J. B. Sorption of water by viscose rayon at low humidities. J. Textile Inst. 43, no. 9: T489-515 (September, 1952).

Sorption data are presented for moisture regains below 2.5% at 25-65°C. for a commercial viscose rayon. The adsorption isotherm is reproducible provided that, whenever the rayon is dried, most of the water is removed at not too high a temperature. Hysteresis effects are reported in cycles of adsorption-desorption of up to only 1-2% regain. This is of interest in that capillary mechanisms are inadmissible in this region, and swelling effects are likely to be very small or negligible. The low humidity adsorption isotherms may be approximately described by means of the Freundlich equation. The isosteric heat of adsorption is calculated from the data. 5 tables, 9 figures, and 34 references. E.S.

CELLULOSE, BACTERIAL

SHIRK, HAROLD G., and GREATHOUSE, GLENN A. Infrared spectra of bacterial cellulose. Anal. Chem. 24, no. 11: 1774-5 (November, 1952).

This work was initiated to determine the ability of *Acetobacter xylinum* to produce pellicle membranes from several carbohydrates with and without radioactive carbon atoms, and to determine the similarity of the pellicles to higher plant cellulose. The infrared absorption spectra of pellicle membranes formed by this bacterium and cultured on cellobiose, mannitol, glycerol, levulose, or dextrose as the primary carbon metabolite, were compared and were found to be grossly similar. Minor variations in absorption intensity and definition were attributed to differences in film thickness. Comparison of the absorption data with those previously reported for cellulose demonstrates that *A. xylinum* consistently synthesizes pellicles cellulosic in nature from all the carbohydrate sources tested. The data should be of value to cellulose chemists and those interested in infrared instrumentation. 1 table, 1 figure, and 23 references. E.S.

CELLULOSE ESTERS—NITROCELLULOSE

SEGALL, G. H., and PURVES, C. B. The action of hydroxylamine, its *O*-methyl ether, and their hydrochlorides on cellulose trinitrate in pyridine. Can. J. Chem. 30, no. 11: 860-71 (November, 1952).

Solution of cellulose trinitrate in dry pyridine containing an excess of hydroxylamine base caused the evolution of one mole of nitrogen gas of 99% purity and the formation in high yield of a fibrous cellulose substituted with 1.7 nitrate and about 0.08 oxime group per glucose unit. The replacement of the hydroxylamine by *O*-methylhydroxylamine suppressed the evolution of

gas in the above reaction, but the product was similar except for a small substitution (about 0.2) of methyloxime groups. Replacement of the hydroxylamine base by the hydrochloride altered the composition of the evolved gas to nitrous oxide, about 85%, and nitrogen, about 15%. The fibrous product, isolated in high yield, had the composition of a cellulose substituted with 1.7 nitrate and about one oxime group. No gas was produced in the parallel experiments with *O*-methylhydroxylamine hydrochloride, and the product contained one methyloxime instead of one oxime unit. The above partial denitrations involved only an incidental degradation of the cellulose trinitrate, and probably only nitrate groups in the second, or third, rather than the sixth, positions of the glucose residues. All four products had a wide solubility in organic liquids and were remarkable for their relatively great stability toward pyridine or caustic soda. 2 tables, 1 figure, and 33 references. E.S.

CELLULOSE ETHERS

STENERSON, HARRY. Behind the markets. Chem. Eng. News 30, no. 45: 4790 (Nov. 10, 1952).

The principal markets for carboxymethylcellulose include detergents, sizing agents for textiles, thickeners in adhesives, drilling muds, core binders, emulsifiers in cosmetics and paints, and laundry finishes. Although government production data are not available, the three principal commercial producers (Hercules, Du Pont, and Wyandotte) are reported to have manufactured about 18 million pounds during 1951, of which Hercules supplied the greatest amount. E.S.

CHEMICAL ENGINEERING

BIENKIEWICZ, B., MARDON, J., and ROBINSON, W. F. E. Some chemical engineering problems in the paper-making industry. Paper-Maker (London) 124, no. 3: 218-24, 226-9; no. 4: 299-300, 302-4 (September, October, 1952).

A number of problems encountered in the industry of interest to chemical engineers and attempts at their solutions are described, including filtration on the Fourdrinier wire, drying, methods of handling the wet web on the paper machine and paper breaks, and the construction of a materials balance. 25 figures. E.S.

JENNESS, LYLE C. Applications of chemical engineering to pulp and paper technology. Paper Trade J. 135, no. 20: 271-2, 274 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 4 references. E.B.

CHEMICAL TESTING—LIMESTONE

DOERING, HELMUT. A new method for the determination of carbonic acid in limestones. Das Papier 6, no. 21/22: 464-5 (November, 1952). [In German]

A simplified rapid method is described which utilizes the principle of the author's modification of the carbonic acid (I) method for determining fermentable sugars in spent sulfite liquor (*cf.* B.I.P.C. 22: 735). The pulverized limestone sample is decomposed with hydrochloric acid in the presence of sodium hydroxide in a vacuum; the liberated (I) is absorbed by the sodium hydroxide and converted to bicarbonate, whereupon (I) can be determined titrimetrically with hydrochloric acid and phenolphthalein. With

some experience, a complete determination can be made in half an hour. 1 table, 1 figure, and 2 references. E.S.

CHEMICAL TESTING—PULP—COPPER

KINGSBURY, R. M., and LAKE, C. L. The determination of copper in wood pulps with tetraethylenepentamine. Tappi 35, no. 11: 527-8 (November, 1952).

A simple and rapid method is described for colorimetric determination of copper in cellulosic material. The sample of material is digested with nitric, sulfuric, and perchloric acids, is neutralized and filtered if necessary, and a blue complex is developed with tetraethylenepentamine. The amount of copper is determined by comparing the transmittancy of the solution to that of standard copper solutions by using a photometer with a filter having maximum transmission at 595 to 640 mμ. The sensitivity, when a 10-gram sample is used, is about 1 p.p.m. as copper. 2 tables and 5 references. E.S.

CHEMICAL TESTING—PULP—PENTOSANS

O'BRIEN, A. S., and DAVIS, T. L. The colorimetric determination of pentosans in highly refined pulp. Tappi 35, no. 11: 499-505 (November, 1952).

The quantity of pentosans present in highly refined pulp can be determined with good precision using the colorimetric procedure involving aniline and acetic acid (*cf.* B.I.P.C. 11: 83). Reliable results are possible because the methylfurfural and hydroxymethylfurfural formed during the distillation do not interfere. The color development step is empirical but gives good results when several variables are properly controlled. Pulps containing approximately 0.1, 0.2, 0.4, 0.6, 0.8, and 1.0% pentosans were consistently differentiated by the use of this colorimetric method. The procedure is fairly insensitive to most of the variables—such as strength of the hydrochloric acid used, the rate of distillation, the size of the pulp sample used, etc. None of the statements in the literature with regard to the percentage of the furfural collected in the first 360 ml. of distillate apply to highly refined pulp. The same is probably true for all statements on the percentage of the total pentosans which can be converted to furfural. Although proposed for highly refined pulps, the method also appears to be as satisfactory as the volumetric or gravimetric procedure for high-level pentosans pulps. 7 tables, 5 figures, and 14 references. E.S.

CHEMICAL TESTING—SULFUR

BIALKOWSKY, H. W., and DEHAAS, GERRIT G. A catalytic oxidation procedure for determining sulphur compounds in kraft mill gases. Pulp Paper Mag. Can. 53, no. 11: 99-105 (October, 1952); Pulp & Paper 26, no. 13: 86, 88 (December, 1952). [Abridgment]

The sources of kraft mill odors and atmospheric sulfur losses are reviewed, together with various analytical procedures for measuring sulfur compounds in the gas streams. These methods include the precipitation techniques, with mercury and cadmium salts for differentiating between hydrogen sulfide, mercaptan, and dimethyl sulfide; the potentiometric silver electrode-silver nitrate titration for inorganic sulfide and methyl mercaptan; and the bromine oxidation method of Siggia and Edsberg for determining alkyl sulfides and disulfides. A rapid method is described for measuring the total sulfur and sulfur dioxide, and the difference is considered to be the sulfide-type sulfur consisting of hydrogen sulfide, alkyl mercaptan, and sulfides. The method is based on the catalytic oxidation of the sulfur compounds in a quartz com-

bustion tube at 1000°C. to sulfur dioxide; the sulfur dioxide, in turn, is oxidized to sulfuric acid in a hydrogen peroxide absorption solution, and the acid is determined by changes in pH. Individual tests can be made in less than a minute, and the procedure can be used for continuously recording the sulfur content of gas streams. The method is capable of detecting a fraction of a p.p.m., and by proper dilution, gas streams containing several hundred thousand p.p.m. can be measured. A definite volume of gas can be tested in the analyzer, or tests can be made continuously. Sulfur dioxide in the original gas sample is determined by by-passing the combustion tube. Tests are described on various known concentrations of hydrogen sulfide, dimethyl sulfide, carbon disulfide, sulfur dioxide, and mixtures containing methyl mercaptan. The method has been applied to most of the gas streams found in kraft pulping operations including stack gases, limekiln gases, digester relief and blow gases, evaporator vents, and building ventilation. 3 tables, 6 figures, and 16 references. E.S.

CHEMICAL TESTING—WHITE LIQUOR

BORLEW, PETER B. Some aspects of the double titration control test with respect to causticizing efficiency evaluations. Southern Pulp Paper Manuf. 15, no. 11: 66-8 (November, 1952).

In the analysis of kraft green and white liquors it is recommended that the hydroxide, sulfide, and carbonate contents be calculated from acidimetric titrations to the methyl orange endpoint, and to the phenolphthalein and methyl orange endpoints after treatment with barium chloride. The application of the analytical procedure in controlling causticizing and the effect of sulfide in the causticizing operation are discussed. No experimental data are given. 16 references. B.L.B.

CHEMIGROUNDWOOD PROCESS

GROSSMANN, KARL. Chemical wood grinding. Wochbl. Papierfabr. 80, no. 19: 704-6 (Oct. 15, 1952). [In German]

The author enumerates different chemical wood grinding processes which were developed in Europe some time ago and which are suitable for German conditions. They permit the manufacture of certain paper and board grades without the addition of chemical pulps. Particular reference is made to the Lignozell process (Karl Weisshuhn & Söhne, German patent 551,905 [Feb. 17, 1929]). Libby's chemigroundwood process is not considered applicable to German conditions, at least not without modifications. E.S.

CHLORINE

ANON. Trend to bigger cells. Chem. Eng. 59, no. 11: 234, 236 (November, 1952).

The application of the S-3 and S-3A types of Hooker diaphragm cells for large new installations in the chlorine-caustic industry is described. Per ton of capacity, these cells are cheaper to install and operate and take up less building space than the older cells of the S-type. The replacement of older cells with the new types may eliminate the need for the construction of a new plant. 2 tables, 4 illustrations, and 1 reference. E.S.

ZWEILING, GÜNTER. Precautions in the storage and use of liquid chlorine. Das Papier 6, no. 21/22: 466-7 (November, 1952). [In German]

Directions for the safe storage of liquid chlorine, stationary and movable containers, testing of the containers, and continuous supervision are given. Each chlorine storage room should be checked every hour for the faultless condition of the safety installations. E.S.

CHROMATOGRAPHY

SAARNIO, JOUKO, NISKASAARI, ERKKI, and GUSTAFSSON, CHARLEY. Quantitative paper chromatography of monosaccharides and some aromatic compounds. Suomen Kemistilehti B 25: 25-9 (1952). [In English]

A method for the quantitative determination of monosaccharides, some aromatic carbonic acids, and aromatic aldehydes by means of paper chromatography is described. The samples to be tested are treated chromatographically and simultaneously with standards on filter paper. The chromatograms are photographed on a suitable film and the negatives are evaluated photometrically with a recording instrument. The principle of the method can be applied to the analysis of other compounds than those mentioned above. 3 figures and 6 references. E.S.

CLAY

TALVENHEIMO, GERHARDT, and WHITE, J. L. Quantitative analysis of clay minerals with the x-ray spectrometer. Anal. Chem. 24, no. 11: 1784-9 (November, 1952).

The authors describe a semiroutine technique for quantitative x-ray diffraction analysis of clay minerals in synthetic and natural mixtures using the Geiger-counter x-ray spectrometer. A combination of preferred-orientation and glycerol-solvation technique was found to enhance the basal spacings and makes possible the differentiation between expanding and nonexpanding clay minerals. The following conditions were most suitable for the qualitative and quantitative analysis of the polycomponent system of kaolinite-illite-bentonite: calcium saturation, glycerol solvation, 5 mg. of clay/cu. inch of mount, and drying at 8% R.H. The procedure developed gives an accuracy within 5 to 10%, comparable with that obtained with camera-type diffraction units but requiring considerably less time. 6 tables, 3 figures, and 16 references. E.S.

COLOR-BLINDNESS

HALSEY, RITA M., and CHAPANIS, A. An experimental determination of some isochromaticity lines in color-deficient vision. J. Optical Soc. Am. 42, no. 10: 722-39 (October, 1952).

From an assortment of red and red-purple Munsel papers, 47 color-deficient and 13 color-normal subjects selected matches for eight standard blue-green and neutral papers. The color-deficient subjects were classified into the following groups: 7 protans with severe defects, 9 protans with mild defects, 10 deutans with severe defects, and 21 deutans with mild defects. For every subject the three colors (one at each of three chroma levels) chosen as matches for each standard were plotted on the I.C.I. diagram, and a straight line, originating at the locus of the standard color, was fitted through the points. The slopes of these lines are significantly different for protans and deutans. Color-deficient subjects with mild defects tend to select the same matches as do those with severe defects, but the former show more variability. In addition, matches made by subjects with severe defects are more often rated "good" or "excellent," and are more likely to fall along

a straight line than are those made by subjects with mild defects. Matches made by the color-normal subjects are most variable and never rated good. Data on the constants of the isochromaticity lines, the Munsell notations of the matches, and the lightness relationships are given. For all matches by deutans and for matches against neutral standards by protans, the agreement of the empirical lines with those predicted from spectral data by Judd is good. However, protan matches against blue-green standards diverge markedly from predictions; protans actually select colors which are yellower than those predicted from spectral data. When the data for all value levels are pooled, it appears that the isocolor lines for some subjects may be curved rather than straight. 7 tables, 13 figures, and 14 footnotes. E.S.

COLORIMETRY

BROWN, W. R. J. The effect of field size and chromatic surroundings on color discrimination. J. Optical Soc. Am. 42, no. 11: 837-44 (November, 1952).

Visual sensitivities to color differences were determined for four colors in the presence of five surrounding fields. The colors matched were red, green, blue, and white. The surrounding fields were successively red, green, blue, white, and black. Color-discrimination ellipsoids were determined for the above conditions for matching fields subtending 12 and 2°. Large visual fields allow better color discrimination than fields covering only the foveal region. For small matching fields, discrimination is reduced by surrounding fields of different color. With large (12°) matching fields, color discrimination is relatively independent of the surroundings. 3 tables, 7 figures, and 11 references. E.S.

VAN DEN AKKER, J. A., DEARTH, LEONARD R., OLSON, O. HARRY, and SHILLCOX, WAYNE M. Instrumentation studies. LXXVI. A study of photoelectric instruments for the measurement of color. Reflectance and transmittance. X. The "Color-Eye" (P.P.G.-I.D.L.). Tappi 35, no. 11: 141-58A (November, 1952); *cf.* B.I.P.C. 23: 197.

The results of a thorough study of the Color-Eye (Instrument Development Laboratories, Inc.) are presented; the study was conducted with the aim of ascertaining the potential suitability of this three-filter colorimeter for color matching and color control in the paper industry. The use of colorimeters and the requirements to be met by such instruments in the paper industry are discussed. The fact is pointed out that all matches in the paper industry are metameric in varying degrees. To be reliable, a filter colorimeter should not indicate a match when a color difference can be seen; it should not indicate an appreciable mismatch when a color difference cannot be seen; and it should indicate the proper direction and magnitude of a color difference. A brief description of the Color-Eye and observations on various instrumental characteristics are given. The good and bad features of the instrument are discussed and suggestions for improvements are given. In view of the definite need in the paper industry for rapid colorimetry and reliable instruments, a plea is made that manufacturers of filter colorimeters analyze the spectral requirements of these instruments more thoroughly. 6 tables, 23 figures, and 7 references. E.S.

CORROSION

ISOTOPE PRODUCTS LIMITED, *Oakville, Ont., Canada.* Paper mill dodged problem of chipping out 20,000 bricks to find corroded areas. Chem. Processing 15, no. 11: 58-9 (November, 1952).

Two sulfite digesters at Anglo-Canadian Pulp and Paper Mills showed signs of serious corrosion; a radiographic survey with a gammagage located the danger spots in 40 hours. Readings were taken in complete circles every two feet of the digester surface. When bricks were removed at several points where corrosion was indicated, the actual corrosion was found to check with the gammagage results. The patching of the lining required about two weeks, after which time the digesters could be operated at reduced pressure; a long shutdown was avoided. 2 figures. E.S.

SHOUMATOFF, NICHOLAS. Digester corrosion measurement. Tappi 35, no. 11: 494-9 (November, 1952).

Three semiannual sets of thickness measurements of a typical sulfate digester are presented and analyzed in detail by statistical methods. It is concluded that the inspection procedure based on such measurements is a powerful and reliable tool for the study of digester corrosion. 6 tables, 1 figure, and 2 references. E.S.

COST—ACCOUNTING

ELLIOT, NORMAN J. Pricing and estimating. Article 3. Cost rate-setting procedures and applications. Boxboard Containers 70, no. 719: 39-41 (November, 1952); *cf.* B.I.P.C. 23: 168.

This is the third in a series of articles covering the major aspects of cost estimating methods and control procedures employed in the paper-box industry. 1 table and 3 illustrations of work sheets and expense classification charts. L.C.

CYMENE

KLEINERT, TH. The formation of *p*-cymene in the sulfite cooking process of coniferous woods. Monatsh. 83, no. 4: 1009-10 (Aug. 15, 1952). [In German]

The formation of *p*-cymene in the sulfite cooking process is caused by a dehydrogenation of terpenes whereby the lignin acts as a hydrogen acceptor. The dehydrogenation is favored by the hydrogen ions of the cooking liquor. 7 references. F.E.B.

DIGESTERS

LETZAS, R. Condensing pots for digesters in the chemical-pulp industry. Norsk Skogind. 6, no. 10: 309-10 (October, 1952); Paper and Timber (Finland) 34, no. 11: 443-4 (November, 1952). [In German; first reference with Norwegian summary]

Following a brief discussion of condensing pots used for digesters and their shortcomings, the author describes a new construction "Gestra" which is regulated by several nozzles in stepwise arrangement; this is suitable for the flow of large quantities as required by digesters. 1 diagram. E.S.

DRYING

K-LA, L. Applications of the flash-drying method. Paper and Timber (Finland) 34, no. 10: 389-90, 392 (October, 1952). [In Finnish]

The application of flash drying to the lime-kiln feed and bark burning are reviewed. 2 diagrams and 5 references. E.S.

DRYING—PAPER

HILL, CHARLES E., and PYLE, CLARENCE J. Drying theory and practice. Paper Trade J. 135 no. 20: 402-17 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine; the article is in two parts: (I) drying theory and (II) drying practice. 23 figures and 28 references. E.B.

DYES AND DYEING

LIPS, H. A. The dyeing of paper. Paper Trade J. 135, no. 20: 322, 324, 326, 328-9 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 315.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. E.B.

ELECTRIC PRECIPITATORS

RESEARCH CORPORATION, *Bound Brook, N.J.* Precipitator has wet bottom. Chem. Eng. 59, no. 11: 182 (November, 1952); *cf.* B.I.P.C. 22: 823.

A brief description of the wet bottom of an electrical precipitator in black-liquor recovery is given. 1 illustration. E.S.

ESPARTO

FALDNER, JOSEF. Esparto, the papermaking raw material of Spain. II. Wochbl. Papierfabr. 80, no. 17: 633-4 (Sept. 15, 1952). [In German] *cf.* B.I.P.C. 22: 905.

The digestion of esparto in Spain, bleaching, manufacture to paper, and stream pollution are discussed briefly. E.S.

EVAPORATION AND EVAPORATORS—SULFITE WASTE LIQUOR

ANON. Hook up GATX evaporators. Pulp & Paper 26, no. 12: 92, 94 (November, 1952).

Three Wisconsin sulfite mills at Rhinelander, Appleton, and Green Bay are now installing stainless-steel Rosenbald switch-system evaporators. At Rhinelander, an attempt will be made to market dry powdered waste liquor; its evaporator will handle the spent liquor from the digesters and yeast plant. The two other installations will burn their liquors for energy values. 4 illustrations of the Rhinelander installations. E.S.

SCHOLANDER, AXEL. Sulfur balance for the evaporation of spent sulfite liquor. Svensk Papperstidn. 55, no. 16½: 620-1 (Kongressnummer, Sept. 4, 1952). [In Swedish; English summary]

The sulfur balance during the evaporation of spent sulfite liquor was studied at four different stages of the process; the sulfur losses in the thick liquor, condensates (I), counter-pressure steam (measured at the last effect) (II), and venting gases (III) are given as a percentage of the sulfur input in the thin liquor. The results obtained in five different sulfite mills making different products (paper or dissolving pulps) are presented in tabular form; they show considerable variations for the different liquors. The sulfur losses in (I), (II), and (III) increase with increasing temperature of the process and decreasing pH of the liquor. 1 table and 1 reference. E.S.

FIBER—STRUCTURE

MERCER, E. H. The biosynthesis of fibers. Sci. Monthly 75, no. 5: 280-7 (November, 1952).

The author postulates that the first step in the formation of fibrous structures is the synthesis of the nonfibrous precursor of the protofibril (primary synthesis); this precursor is next transformed into the protofibril (fibrillation); and the resulting fibrils are then organized into the higher forms. The second and third stages are discussed in some detail, and the usefulness of these concepts is pointed out in accounting for the development of the quite complicated fibrous formations actually observed at the macromolecular level. Although protein fibers form the principal part of the article, reference is also made to plant cell walls and cellulose. 1 table, 6 figures, and 33 references. E.S.

TRIPP, VERNE W., and ROLLINS, MARY L. Morphology and chemical composition of certain components of cotton fiber cell wall. Anal. Chem. 24, no. 11: 1721-8 (November, 1952).

Morphological elements of commercial cotton have been studied by separation of certain structural entities from untreated and chemically modified fibers. The primary wall (with cuticle), the winding, and the lumen contents have been isolated and their chemical composition has been estimated. The light microscope has been used in identifying and in observing what takes place during the isolation of these elements. The electron microscope has been used to study their structural details. The noncellulosic substances in the fiber are more concentrated in the thin primary wall and in the lumen than in the thicker, nearly completely cellulosic secondary wall, which makes up the bulk of the fiber. The primary wall is shown to consist of a felted network of cellulose fibrils about 200 A. in diameter, embedded in a matrix of pectic, nitrogenous, and waxy substances. Its composition is approximately 50% cellulose, 9% pectic substances, 8% waxy material, and nitrogen which, when multiplied by the conventional factor of 6.25, indicates 14% protein; mineral matter and cutin occur in traces. The winding appears to be cellulose; its organization is fibrillar, but of a pattern differing from the primary wall network or the highly parallelized secondary wall cellulose fibril arrangement. The lumen contents (the protoplasmic remains) contain considerable protein; though tubular in form, no organized fine structure can be discerned by the electron microscope. The chemical composition of the whole cotton fiber is considered with respect to that estimated in the structural components studied. 1 table, 12 figures, and 29 references. E.S.

FIBER—TESTING

MAGNE, FRANK C., and SKAU, EVALD L. Nonfreezing water and nonfreezing benzene capacities of cottons and modified cottons. Textile Research J. 22, no. 11: 748-56 (November, 1952); *cf.* B.I.P.C. 18: 17.

The calorimetric heat-of-fusion method has been used to determine the amount of nonfreezing water present in cotton and modified cotton fibers at various moisture contents. On desorption at room temperature, all the water which will freeze at −4.5°C. is removed before the fibers release any of the nonfreezing water. Data have been obtained to show the effect of variety, maturity, purification, mercerization, alkali swelling with and without solvent-exchange drying, ethylamine treatment, and partial acetylation on the nonfreezing water capacity of cotton fibers. In general, the results seem to indicate that the nonfreezing water capacity is related to the total

available surface, the proportion of amorphous cellulose, and the degree of distention of the wetted fibers. The available evidence indicates that some of the nonfreezing water will freeze at lower temperatures but some of it is nonfreezable. The nonfreezing benzene values seem to refute the solvent theory and to corroborate the theory of capillarity for explaining the lowered activity of benzene in cellulose and, therefore, by implication, the lowered activity of water in cellulose. 3 tables, 2 figures, and 36 references. E.S.

MONTGOMERY, D. J., and MILLOWAY, W. T. The vibroscopic method for determination of fiber cross-sectional area. Textile Research J. 22, no. 11: 729-35 (November, 1952).

The elementary theory of the vibroscope, a device for determining mass per unit length of a fiber, is reviewed, and the corrections from the simple law resulting from elasticity are discussed. The vibroscope (*cf.* Gonsalves, B.I.P.C. 14: 314-15; Dart and Peterson, B.I.P.C. 19: 591) consists of a system for applying an oscillatory force of known frequency to a filament under tension, and a means for detecting mechanical resonance under the applied oscillatory force. Various forms of apparatus are described. Comparisons of vibroscope results with results obtained by other methods are given. The agreement found is within the limits of the precision of the methods. 4 tables, 2 figures, and 4 references. E.S.

FIBERS

'CELLULOSE.' This material age. Brit. Printer 65, no. 387: 42-3, 50 (November-December, 1952).

The increased paper consumption throughout the world is encouraging the development of alternative papermaking fibers. The author reviews briefly the possibilities of bamboo, southern pines, hardwoods, eucalyptus, bagasse, and straw; reference is also made to Indian experiments with castor oil plants and grasses, and to African studies of papyrus. 4 colored photomicrographs, taken from the book "Papermaking fibers" by Tullis, Russell & Co. Ltd. (*cf.* B.I.P.C. 21: 679). E.S.

ROBERTS, J. R. Silvacel markets and uses. J. Forest Products Research Soc. 2, no. 1: 44-6 (April, 1952).

The author traces the development of whole-wood fibers and shows the many uses of the finished product in industry under the trade name of Silvacel; the thermoplastic Silvaloy materials and their uses are also mentioned. R.G.K.

FINANCE

BAUMGARTEN, HOWARD. The role of life insurance companies in paper industry financing 1949-51. Tappi 35, no. 11: 22A, 24A, 26A, 28A, 30A (November, 1952).

Life insurance companies are an important source of capital funds in the economy generally and for the paper industry specifically. Twenty of the 25 largest life insurance companies in the United States hold almost half a billion dollars worth of pulp and paper industry securities in their portfolios. Over 90% of this total is debt securities and amounts to $432 million. The balance consists of $33 million of equity securities—both preferred and common stock. The holdings of these 20 companies—both debt and equity securities—have increased more than four times the amount held in 1945. The largest holders of paper industry securities are Prudential with $114 million and Metropolitan Life with $89 million. The changes that occurred

from year to year have been due to the investment operations of a small number of these insurance companies. The investment activities of New York Life and Prudential have been most important during the past three years. Seventeen of the 20 insurance companies invested in preferred stock, and only five held common stock in the pulp and paper industry. This study shows the continued role of insurance companies in providing funds for expansion in the years since the previous study was made in 1949 (*cf.* B.I.P.C. 20: 639). 9 tables, 2 figures, and 2 references. E.S.

FINISHING ROOM

WILEY, BAXTER L. Finishing and converting. Paper Trade J. 135, no. 20: 450-63 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 52 figures. E.B.

FOAM

PETERS, D. A method for the comparative determination of foams. Angew. Chem. 64, no. 21: 586-90 (Nov. 7, 1952). [In German]

Following a review of the present knowledge of the formation and properties of foams and present methods for measuring them, the author describes an apparatus for converting small quantities of solutions into foams. The instrument permits the simultaneous comparison of the dynamic and static foaming power of 30 samples. The term "minimum bubble size" is introduced to designate the smallest size of bubbles which can be produced irrespective of the diameter of the steel cannulas employed. 5 figures and 51 footnotes. E.S.

WALLING, CHEVES, RUFF, EDGAR E., and THORNTON, JAMES L., JR. An improved apparatus for the study of foams. J. Phys. Chem. 56, no. 8: 989-93 (November, 1952).

An apparatus for foam-drainage measurements is described which gives useful results primarily with rapidly draining films in which, under the conditions employed, the loss of liquid from the foam occurs entirely by loss of water from the films of the intact foam. With slow-draining foams, initial foam densities are more erratic and foams collapse rather than drain, so that the present method is inapplicable. A more general application of the apparatus is to foam-composition studies, and results obtained indicate that it can be used to determine surface concentrations on any system producing a sufficiently stable foam with rather uniform bubble size. It is particularly useful in determining surface concentrations of each component in polycomponent systems; although absolute concentrations are subject to uncertainties in determining total film areas, relative surface concentrations may be determined with precision depending only on the analytical techniques employed. 6 tables, 3 figures, and 11 footnotes. E.S.

FOLDING BOXES

OSWALD, K. H. Ampoule packaging in break boxes. Neue Verpackung 5, no. 9: 256 (September, 1952). [In German] *cf.* B.I.P.C. 22: 741.

The principle of the break box (Knickbox) is applied to a folding box and a setup box for packaging ampoules. 3 figures. E.S.

FORESTS AND FORESTRY

ANON. The Riegel Woodlands Corp. Pulp & Paper 26, no. 12: 80, 82 (November, 1952).

The forest and land management for the Riegel Carolina 200-ton sulfate mill through its subsidiary, the Riegel Woodlands Corp., is described. The mill requires 450 cords of pulpwood per day; at the present time, only about 25% of this amount is produced from the Riegel Woodlands acreage. However, by careful cutting and reseeding practices, fire control, and acquirement of additional acreage, it is expected to obtain from 50 to 75% of the requirements from Riegel holdings. 3 illustrations. E.S.

BROOKS, J. D. Establishing pine plantations for pulpwood production in Australia. Pulp Paper Mag. Can. 53, no. 11: 168, 170 (October, 1952).

Australian Paper Manufacturers Limited has established a subsidiary company, A. P. M. Forest Proprietary Limited, to procure pulpwood, to acquire and manage eucalypt forests, and to establish pine plantations sufficient to supply some of the long-fibered pulp requirements of the company. Large-scale mechanical planting of *Pinus radiata* is being done on extensive areas of recently purchased farm land and worthless native forest. The present plans guarantee substantial supplies of pulpwood in approximately 15 years. The Australian program is described, and detailed attention is given to the method of land clearing with a "Hi-Ball" and two tractors. 1 figure. L.C.

PERRY, H. J. Southland show-me tour. Paper Trade J. 135, no. 21: 14-15, 18 (Nov. 21, 1952).

The forest resources and the silvicultural methods of the large paper manufacturers in the South were inspected by 40 representatives of the industry in a recent tour conducted through four southern states. The silvicultural program is evaluated. 13 illustrations. L.C.

PERRY, HENRY J. The wood supply. Paper Trade J. 135, no. 20: 102, 104, 107-10 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 10 tables, 1 map, and 3 illustrations. E.B.

FORESTS AND FORESTRY—EDUCATION

ANON. The post graduate course in logging at the University of New Brunswick. Pulp Paper Mag. Can. 53, no. 11: 173-4, 176 (October, 1952).

A justification for the existence of a postgraduate course in logging is given, and the program of study in this field at the University of New Brunswick is outlined. L.C.

GROUNDWOOD PULP

HAYES, H. L. Manufacture of groundwood. Paper Trade J. 135, no. 20: 121-3 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 317.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 figure. E.B.

KLOSS, T. E. Mechanical pulping. Paper Trade J. 135, no. 20: 123-4, 126-7 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 317.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 2 tables and 1 figure. E.B.

HARD WOODS

BHAT, R. V., and VIRMANI, K. C. Indigenous cellulosic raw materials for the production of pulp, paper and board. Part IX. Newsprint grade mechanical pulp from *Sterculia campanulata* (papita). Indian Forester 78, no. 5: 222-8 (1952); Indian Pulp and Paper 7, no. 2: 139-43 (August, 1952); *cf.* B.I.P.C. 23: 101.

Laboratory experiments for the production of mechanical pulp from *Sterculia campanulata* Wall. are described. The species is very common in the deciduous forests of the Andamans; the wood is used in the manufacture of match splints and boxes. It is light in weight and color, but discolors quickly if not immediately dried after felling. Standard pulp sheets were prepared from 100% mechanical pulp from this species and from a mixture of 70% mechanical pulp and 30% bleached bamboo pulp. The results indicate that, under appropriate grinding conditions, a mechanical pulp suitable for newsprint can be obtained; the color of the mechanical pulp is also satisfactory (brightness about 59) for this purpose. The addition of 30% bleached chemical bamboo pulp improves the strength properties of the resultant paper; the chemical pulp need not be beaten prior to admixture. 3 tables. E.S.

HISTORY

FELDHAUS, F. M. The oldest wrapping papers. Neue Verpakkung 5, no. 7: 168 (July, 1952). [In German]

It is not known when strong papers were first used for wrapping purposes; however, it seems likely that needle paper was one of the earliest uses. A woodcut by Jost Amman (dated 1568) shows the work shop of a pin manufacturer; a female figure in the front attached the needles to sheets of paper which were then packaged in thin wood-veneer boxes. Another special wrapping paper which was made on a large scale was that used for packaging sugar loaves; it appears as early as 1570 in old reproductions of sugar refineries. 1 illustration. E.S.

MAIDWELL, C. F. A survey of the history of papermaking. Tech. Bull. Tech. Sect., Brit. Paper and Board Makers' Assoc. 29, no. 3: 72-8; no. 4: 105-11 (June, August, 1952).

A general account is given of the spread of papermaking from China to other Asiatic countries and via the Arabs in North Africa to Europe (Spain, Italy, France, Germany, Holland, and England). In conclusion, the history centering around Robert's invention of the paper machine is related briefly, and mention is made of some of the important developments in the papermaking field during the 19th century. 11 figures and 4 references. E.S.

HYDRAULIC TURBINES

HAFNER, RAIMUND. Hydraulic turbines and their economy as drives in the paper mill. Wochbl. Papierfabr. 80, no. 18: 667-9 (Sept. 30, 1952). [In German]

The author discusses different types of hydraulic turbines (Francis, Pelton, Kaplan, etc.) and their efficiency as paper-machine drives under the hydraulic conditions prevalent in Germany; the replacement of inefficient obsolete types with modern equipment is urged. E.S.

INCLUSION COMPOUNDS

CRAMER, FRIEDRICH. Inclusion compounds. Angew. Chem. 64, no. 16: 437-47 (Aug. 21, 1952). [In German]

In an extensive review of the different types of inclusion compounds, a brief reference is made (p. 444-6) to inclusion compounds of cellulose, amylose of potato starch, and the iodine reaction of starch. 2 tables, 21 figures, and 46 references. E.S.

INSTRUMENTATION

ANON. Recent developments in instruments and machines used in British paper industry. Paper Trade J. 135, no. 19: 20, 22-4 (Nov. 7, 1952).

A description of several recently developed British machines is given, including a moisture meter (*cf.* B.I.P.C. 23: 40) and pH meter by Marconi Instruments Ltd.; a static charge tester by Baldwin Instruments Co. Ltd. (*cf.* B.I.P.C. 22: 944) and a radiation thickness or weight gage (Atomat) by the same company; a laboratory-size coating and impregnating machine; the Soldan Autolift, a mechanism to keep the top of a pile of stacked material at a constant level for feeding production machines; and the "W-J" variable-size, zig-zag folding unit (*cf.* B.I.P.C. 23: 182). 7 illustrations. E.S.

THODE, EDWARD F. Instrument applications in pulp and paper mills. Paper Trade J. 135, no. 20: 355, 358-60, 362-3, 365 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 10 figures. E.B.

UPSON, J. R. A must in this plant. Instrumentation 6, no. 3: 24-6 (October-December, 1952).

The organization of the instrument department of the Union Bag and Paper Corp. at Savannah, Ga. is described; the training of new personnel forms an important phase of the departmental operations. 6 figures. E.S.

IONOGRAPHY

FOSTER, A. B. A simplified apparatus for filterpaper ionophoresis. Chemistry & Industry no. 43: 1050-1 (Oct. 25, 1952).

A simple and reliable apparatus is described for use in filter-paper ionophoretic studies of proteins and carbohydrates. A strip of Whatman No. 3 filter paper is enclosed between two sheets of plate glass in the horizontal plane. The ends of the glass sheets rest on Perspex tanks which contain the aqueous buffer solution into which the ends of the filter paper dip. Thin platinum sheets dipping into these tanks serve as electrodes and provide the power (up to 1200 volts and 40 milliamp.) for separating the constituents of the sample spotted on paper. On termination of the test, the paper is dried and treated in an appropriate manner to reveal the location of the materials under examination. 2 figures and 12 references. J.O.T.

KRAFT PULP AND PAPER

BOLTON, P. S. Coarse papers. Paper Trade J. 135, no. 20: 338-44 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 11 illustrations. E.B.

DURGIN, ALBERT G. Coarse papers, bag and board. Paper Trade J. 135, no. 20: 329-30, 332-4, 336-7 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 2 tables. E.B.

LIGNIN

ADLER, ERICH, and LINDGREN, BENGT O. Some aspects on lignin structure. Svensk Papperstidn. 55, no. 16½: 563-75 (Kongressnummer, Sept. 4, 1952). [In English]

The authors summarize studies on the structure of lignin carried out at the Swedish Forest Products Research Laboratory within the last decade and discuss the results in relation to both older findings and recent work published by other investigators. 1 figure and 75 references. F.E.B.

ANON. Alkali lignin as a stabilizer for asphalt emulsions. Chem.-Ztg. 76, no. 25: 710-11 (Oct. 20, 1952). [In German]

Following a brief reference to the three types of Indulin (A, B, and C), the suitability of Indulin C for stabilizing asphalt emulsions is discussed. E.S.

ELY, R. E., JACOBSON, W. C., and KANE, E. A. Metabolism of lignin in orchard-grass hay cut at various stages of maturity. U. S. Bureau of Dairy Industry BDI-Inf-125: 4 p. (June, 1951).

Feeding experiments of cows with orchard-grass hay of various stages of maturity seem to indicate that a part of the lignin—in some cases up to 20%—is digested by the dairy cattle. 4 tables. F.E.B.

ENKVIST, TERJE, ALFREDSSON, BO, and HÄGGLUND, ERIK. Studies on the sulfonation of alkali lignins. Svensk Papperstidn. 55, no. 16½: 588-96 (Kongressnummer, Sept. 4, 1952). [In English; German and Swedish summaries]

Lignins isolated from soda and kraft black liquors can be partially sulfonated in acid bisulfite cooking liquor but remain almost insoluble in water. In alkaline sulfite cooking liquor at pH 8.6 and 135°C. for six hours about half the lignin remains unsulfonated, whereas upon longer cooking this lignin is partially sulfonated, giving a mixture of differently sulfonated products. One part has only 2-3% sulfonic acid-sulfur, which can be precipitated by bases such as cinchonine or 2-naphthylamine. Another part is highly sulfonated and is almost completely precipitated by surfene hydrochloride. From this fraction a small amount of a low-molecular sulfonated lignin with about one sulfonic acid group and one phenolic hydroxyl group per phenylpropane building stone was isolated. The highly sulfonated lignin seems to be formed preferentially from the low-molecular fraction of the thiolignin which passes the dialysis membrane. Upon heating with sodium hydroxide at 100°, the sulfonic acid groups are partially, and at 160°, completely split off. No thio sulfur is removed during the sulfonation. Acetylation, tosylation, or pretreatment with methanol-hydrochloric acid, diazome-

thane, or 2,4-dinitrophenylhydrazine prevent sulfonation, whereas methylation with dimethyl sulfate and sodium hydroxide or with dimethyl sulfate followed by methanol and hydrochloric acid has no effect. 11 tables, 2 figures, and 11 references. F.E.B.

FAYE, M. A., and WILEY, PAUL R. Indulin. Am. Ink Maker 30, no. 10: 31-5, 65 (October, 1952).

Some of the chemical and physical properties of the three grades of Indulin A, B, and C—an alkali lignin from southern pines marketed by the West Virginia Pulp and Paper Co.—are described for finding possible commercial outlets for the materials. Indulin A has been under study for a number of years as binder in printing inks. 4 tables and 6 figures. E.S.

FREUDENBERG, K. The origin of lignin in the plant. Holzforschung 6, no. 2: 37-42 (1952). [In German] *cf.* B.I.P.C. 22: 830; 23: 178.

This gives essentially the same information as previous articles. 3 figures and 1 reference. E.S.

KRATZL, K., and SILBERNAGEL, H. The behavior of sprucewood and lignin on thermal treatment with water. Monatsh. 83, no. 4: 1022-37 (Aug. 15, 1952). [In German]

Extraction of benzene-alcohol extracted sprucewood with hot water gives an extract which contains a lignin-polysaccharide complex, corresponding to 3% of the total lignin. Oxidation of this lignin gives vanillin. Upon further extraction of the wood with hot water, more hemicelluloses are dissolved but no lignin. On extraction at pH 7-8, about 1.6% of the lignin goes into solution and, on treatment of the extract with 72% sulfuric acid, about one fifth of the methoxyl-containing material remains in solution. This part may be identical with Wacek's "protolignin I," but it gives no vanillin on oxidation with nitrobenzene. Both the neutral and the acid extracts show typical lignin ultraviolet absorption bands in an acid medium, but broad bands in alkaline solution. A similar behavior is shown by D-arabinose. The infrared absorption curve shows the presence of compounds with aromatic double bonds in the extracts. When sprucewood is treated with water at 100-200°C. the properties of the lignin are changed, as shown by a decrease in vanillin yield on oxidation. Sprucewood heated 20 hours at 200° gives only 15-17% of the amount of vanillin given by the untreated wood. About 50% of the lignin is converted into a "polymeric phenol compound" which no longer can be oxidized to vanillin. This decrease in vanillin yield is the result of a condensation of the lignin with itself, because the addition of D-arabinose to the wood before treatment with hot water has no effect upon the vanillin yield. Since wood which has been treated in a dry state gives a higher yield of vanillin than wood heated in water, it seems that the carbohydrates protect the lignin and, when this protection is eliminated by a hydrolysis, the lignin condenses. "Solid Staypack," a wood product prepared by the Forest Products Laboratory in Madison by short heating of birchwood, gives the same amounts of vanillin and syringic aldehyde as untreated birchwood, which indicates that the lignin is not affected by the heat treatment. 2 tables, 4 figures, and 25 references. F.E.B.

LIGNIN—ABSORPTION SPECTRA

AULIN-ERDTMAN, GUNHILD. Spectrographic contributions to lignin chemistry. II. Preliminary report. Svensk Papperstidn. 55, no. 19: 745-9 (Oct. 15, 1952). [In English] *cf.* B.I.P.C. 14: 319.

Extensive ultraviolet absorption studies have been carried out on various soluble derivatives of spruce lignin, Brauns' native lignin from *Picea mariana* and *Tsuga heterophylla,* the dehydrogenation-polymerization product (DHP) of coniferyl alcohol of Freudenberg, and low-molecular model substances; the purpose was the estimation of the content of phenolic hydroxyl groups in softwood lignins and the disclosure of the origin of the long-wave absorption "shoulder" in the curves of various lignin preparations, as well as other structural features of lignin. The different model substances and preparations were investigated in various solvents which resulted in various degrees of ionization. In some cases the spectral changes caused by such reactions as sulfonation, methylation, and catalytic hydrogenation were studied. The data obtained for the model substances were used to calculate the changes in absorption which are to be expected upon the ionization of high-molecular compounds or mixtures containing various amounts of free phenolic hydroxyl groups. By comparing the experimental results for lignin and ligninlike preparations with computed values, certain conclusions were reached regarding the content of free phenolic hydroxyl groups in these substances. A table summarizes the results relating to nonconjugated guaiacyl nuclei with free phenolic hydroxyl groups. In addition, a low percentage (about 5% for Brauns' native lignin and less for ordinary preparations) of nonetherified diguaiacyl units of the tetrahydrodehydrodieugenol type is strongly indicated. No sterically hindered groups were found in any of the preparations. The spectral changes resulting from hydrogenation, sulfonation, and methylation of the lignin substances and the DHP are consistent with the assumption that small amounts of etherified ferulic aldehyde elements are present in these products. 1 table, 10 structural formulas, and 9 references. E.S.

PEW, JOHN C. Color reactions of lignin in solution compared to similar reactions in the solid state. J. Am. Chem. Soc. 74, no. 22: 5784-5 (Nov. 20, 1952); *cf.* B.I.P.C. 21: 626; 22: 830-1.

A re-examination of the color reaction of isolated spruce lignin with resorcinol in solution and the solid state *in situ* or absorbed on filter paper shows that in the solid state the maximum is shifted toward the longer wavelengths. 4 references. F.E.B.

MACHINERY

SVEDLUND, B. A brief survey of paper and board machines delivered to the Swedish paper industry after the second world war. Svensk Papperstidn. 55, no. 16½: 632-43 (Kongressnummer, Sept. 4, 1952). [In Swedish]

With reference to the extensive modernization program and installation of new machines in Swedish paper and board mills during the war and, particularly, after 1945, the author presents a general review of the new machinery under the headings: beating and screening, headboxes, Fourdrinier section, couch presses and rolls, vacuum pumps, presses, drier section, steam piping, cooling cylinders, calenders, winders and rewinders, drives, Yankee machines, and board machines. Many of the new installations were manufactured in Sweden; some were imported from Germany, Switzerland, and the United States. 34 figures. E.S.

MACHINERY—BEATERS

ANON. A continuously working breaker beater for waste paper, pulp, etc. Wochbl. Papierfabr. 80, no. 18: 671-2 (Sept. 30, 1952). [In German]

A continuously operating open beater construction is described which consists of a disintegrating drum (to which hot water with or without addition of chemicals is admitted), a bed plate, a propeller, a rag catcher, a washing drum, and screen plates through which the properly disintegrated pulp drains into a chest underneath and is pumped from there to the following conversion stages. 2 diagrams. E.S.

MACHINERY—BOOMS

LORD, G. ROSS. Hydraulic model study of Manicouagan River holding boom. Pulp Paper Mag. Can. 53, no. 11: 150, 152-3 (October, 1952).

The Quebec North Shore Paper Co., Limited, is at present constructing a hydroelectric power plant on the Manicouagan River near Baie Comeau. The dam which is being built will raise the level of the head pond and create new channels, thus necessitating the construction of a new holding boom in the area. A series of tests have been made using a scale hydraulic model of the site to determine the best location of the boom. All the topography of the 130-foot contour under consideration, the water velocity and level, and the current direction were included in the model in appropriate scale. Seven possible positions for the boom were studied, and one was found best from the standpoint of velocities around the boom, economy, and wood handling. The materials and methods used in the hydraulic model study are described. 9 figures. L.C.

MACHINERY—CUTTERS

ANON. A novel cutter for mechanical wood pulp. Finnish Paper and Timber 3, no. 7: 87 (September, 1952). [In English]

A labor-saving automatic Q/S cutter and layboy for Kamyr wet machines is described. The machine is hydraulically operated and requires one girl for attendance, in addition to a baling press and one operator; it is manufactured by Karhula Engineering Works, Karhula, Finland. 3 illustrations. E.S.

MACHINERY—DRIVE

JUSTUS, E. J. Paper machine drive fundamentals. Paper Trade J. 135, no. 20: 394-6, 398-401 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 7 figures. E.B.

MACHINERY—DRIVE, ELECTRIC

CARDELL, R. The application of three-phase commutator motors as paper-machine drives. Svensk Papperstidn. 55, no. 16½: 576-8 (Kongressnummer, Sept. 4, 1952). [In Swedish]

The advantages of the three-phase commutator motor for driving small and medium-sized paper machines and as an auxiliary drive are outlined. 4 figures. E.S.

MACHINERY—ELECTRIC EQUIPMENT

MOORE, J. C. More power production with synchronous motors. Paper Ind. 34, no. 8: 987 (November, 1952).

The advantages of synchronous motors are outlined, particularly the possibility of improving the plant power factor through their installation. 1 diagram. E.S.

MACHINERY—EMBOSSING MACHINERY

GRÜMER, F. C. Conversion of paper by embossing. Allgem. Papier-Rundschau no. 20: 910-13 (Oct. 27, 1952). [In German]

The different methods and machinery constructions for embossing paper are described, including the plate embosser (which is particularly suitable for producing a high-grade linen finish) and different types of embossing calenders with two or three rolls; linenizing calenders with two soft paper rolls covered with linen and transparent watermarking calenders with five rolls (principally used for cigarette papers) are also mentioned. 4 illustrations. E.S.

MACHINERY—FELTS

JÖRG. Storing of wet felts—life periods of wet felts. Wochbl. Papierfabr. 80, no. 19: 707 (Oct. 15, 1952). [In German]

New wet felts and jackets should be unpacked as soon as received from the manufacturer and hung over poles so that the folds disappear. The storage rooms should be dry with well fitted windows to prevent the entrance of insects. All felts should be mothproofed; the painting of the glass panes on the inside with a blue color is recommended, because moths avoid blue light. All new felts should be recorded on file cards, on which the name of the manufacturer and other pertinent data are entered, particularly the first day of use, the life period of the felt, and the reason for its removal. With increasing machine speeds the life of felts will become shorter; accurate data should be accumulated and used for comparisons. 1 figure. E.S.

MACHINERY—GRINDERS

DANIELL, WARREN F. Grinders and grinding. Paper Trade J. 135, no. 20: 128-35 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 8 figures. E.B.

MACHINERY—HOSE

MULLER, J. A. How to get more service from industrial hose. Paper Trade J. 135, no. 22: 24-5 (Nov. 28, 1952).

The author discusses the three layers (tube, carcass, and cover), the coupling, and the construction of industrial rubber hose. Factors which should be considered in selecting hose are listed, and advice for proper maintenance is given. 1 illustration. L.C.

MACHINERY—JORDANS

ANON. A new jordan type. Wochbl. Papierfabr. 80, no. 19: 706 (Oct. 15, 1952). [In German]

The Spanish firm Carlos Schlarb, San Sebastian has developed a vertical jordan construction with the bed plates arranged in a circle around the beater roll. Low power consumption, continuous beating at high densities (8% consistency and more), and regulated pressure, throughput, and beating periods are claimed for the new machine. 1 illustration. E.S.

MACHINERY—PAPER MACHINE

BALDWIN, PAUL. Fourdrinier paper machines—wet end. Paper Trade J. 135, no. 20: 365-6, 368, 370-4 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine; it deals with the Fourdrinier machine. 19 figures. E.B.

CORBIN, WESLEY. Paper machine—wet end. Paper Trade J. 135, no. 20: 374, 376, 378-86 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine; it covers Fourdrinier and cylinder machines. 25 diagrams. E.B.

ESTABROOK, RICHARD. Fourdrinier paper machines—dry end. Paper Trade J. 135, no. 20: 386, 388-91 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 7 diagrams and 4 references. E.B.

REDDEN, C. A. Fourdrinier paper machines—dry end. Paper Trade J. 135, no. 20: 391-4 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 4 figures. E.B.

MACHINERY—PRESSES

DIXON, W. B. The operation of a stacked press with vacuum transfer on an English newsprint machine. Pulp Paper Mag. Can. 53, no. 11: 115-18 (October, 1952); *cf.* B.I.P.C. 23: 183.

The section dealing with the stacked suction press and description of the pop theory is reprinted. 6 figures. E.S.

MACHINERY—PUMPS

CONDICT, E. C. Minimum continuous safe flow of centrifugal pumps. Paper Trade J. 135, no. 21: 25, 28-9 (Nov. 21, 1952).

The smallest flow at which a centrifugal pump can be safely operated is called the minimum continuous safe flow; the amount the temperature of the fluid can rise before flashing into vapor is known as the allowable temperature rise. Calculations for determining these factors are presented in typical examples and supplemented by curves for the graphical solution of the problem. 3 figures. E.S.

HORNE, L. F. Planning a preventive maintenance scheme for centrifugal pumps. Pulp Paper Mag. Can. 53, no. 11: 126-7 (October, 1952).

The inspection plan, maintenance program, and record system for a large number of units, as carried out at the Belgo Division of the Consolidated Paper Corp. Ltd., are described. 2 reproductions of inspection cards. E.S.

MACHINERY—REFINERS

MULCAHY, P. J. Mechanical equipment for fiberizing wood. J. Forest Products Research Soc. 2, no. 3: 72-8 (September, 1952).

The author gives a detailed account of different types of wood-fiberizing equipment, including batch (beaters, ball and rod mills, and pan mills) and continuous equipment (disk or attrition mills, cone or plug refiners, hammer

mills, and special machines). Important factors in the use of mechanical fiberizing equipment are discussed. 10 figures and 21 references. R.G.K.

SYME, T. D., and DAWSON, J. A. A mill study of kraft pulp refining. Pulp Paper Mag. Can. 53, no. 11: 106-14 (October, 1952); Can. Pulp Paper Ind. 5, no. 11: 8-12, 14, 16, 18, 20, 22, 24 (November, 1952).

The results of a kraft refining survey in progress at the specialty mill of Pacific Mills Limited, Ocean Falls, B.C. are given. Mill tests on jordans, Hydrafiners, and beaters are reviewed, with reference to the effect of applied power, consistency, type of equipment, and tackle. For a jordan, Mullen-development efficiency and power-efficiency improved with increased power input, whereas tear efficiency decreased. For the series operation of jordans or Hydrafiners, the total applied power governed the resultant freeness and power efficiency whereas, at constant total applied power, the input to each unit affected the strengths. However, the tear development for the Hydrafiner appeared to depend only on the total applied power. A bank of two Hydrafiners in series was more efficient with regard to Mullen and power, but less with regard to tear, than a line of six continuous beaters. These Hydrafiners showed better power and tear development efficiency, but poorer Mullen, than three jordans set up in parallel. The throughput of the individual units appeared to be a pertinent factor in this comparison. Within a consistency range of 1.9 to 2.9%, the Mullen and tear development efficiencies of a jordan increased with increasing consistency, whereas power efficiency decreased. The action of a jordan fitted with 3/16-inch tackle appeared to be less drastic than that of one fitted with 3/8-inch tackle. A testing procedure (ratio testing method), which employs the Valley beater as a basis for comparison, is described; it was used for some of the comparisons made. Accumulated data show that Mullen losses ranging from 20 to 40% are experienced from the machine headbox to the dry end. This would indicate that studies of sheet formation, loss of fines, and drying might reveal how the Mullen of the finished paper might be improved. The studies are being continued. 6 tables, 11 figures, and 2 references. E.S.

MACHINERY—SAWS

KERR, LLOYD. Training aids for mechanical saws. Pulp Paper Mag. Can. 53, no. 11: 165-6 (October, 1952).

Training aids for the operation, care, and maintenance of the power chain saw must be increased in number and improved in quality. The author discusses some of the available aids and describes the Quebec North Shore Paper Co.'s wood operations training program for cutters. L.C.

POND, T. M. Report of cutting tool committee. Pulp Paper Mag. Can. 53, no. 11: 156, 158 (October, 1952).

Eastern Canadian and New England pulpwood operations have indicated a trend toward the replacement of the bucksaw with the one-man power chain saw. In spite of the initial high cost of these saws, an increasing number of cutters have been investing in their own equipment and have earned as much as $1.67 more per day at the same price rates in effect for bucksaw men; they have stayed on the job for up to double the time of the bucksawers. Canada allows cutters with their own equipment to take an appropriate tax deduction to cover depreciation. Reports of the chain-saw experience of several companies are discussed in reference to production increases, cost, effect on labor turnover, and forest fires. The consensus is that no direct blame can be placed on power equipment as the cause of fire in dry timber. L.C.

STEWART, A. M. Developments in training aids for conventional tools. Pulp Paper Mag. Can. 53, no. 11: 160, 162 (October, 1952).

Training aids for the use of conventional cutting tools are discussed in two groups: those developed by the industry and available through the Woodlands Section of the C.P.P.A., and those supplied by the manufacturers of the tools. Books, pamphlets, colored films and slides, and posters are among the visual aids employed; many are available in French as well as in English. L.C.

MACHINERY—STRIPPING MACHINE

CORNELL PAPERBOARD PRODUCTS COMPANY, *Milwaukee*. Stripping cartons with timed air blasts. Boxboard Containers 70, no. 719: 36-8 (November, 1952).

An automatic stripping device, invented by Fred A. Wenzel and used concurrently with the cutting-creasing operation, employs controlled air pressure to blast carton scrap out of a sheet of boxboard. Composed of a series of 16 air jets operating at 75 pounds of pressure in timed synchronism with the delivery of each sheet, the "Cornell Strip-Air" is adaptable to any width cutter-creaser and is suitable for stripping Brightwood, outfold, infold, and lock-corner cartons without damage to the blank. The device has been made more efficient by operation in conjunction with a motor-driven conveyor belt which carries scrap and trim to the floor where it is allowed to accumulate for re-use in the beater room. The adjustable timing mechanism with a 17th cam shaft for flexibility is described, and the advantages and limitations of the mechanism are given. The device will be made available to other interested box manufacturers. 4 illustrations. L.C.

MARKET RESEARCH

BOYCE, CHARLES W. Changing patterns of paper use. Paper Mill News 75, no. 45: 12-14, 18, 20-1 (Nov. 8, 1952).

The postwar production-expansion cycle indicates that the paper industry will have at least 35% more capacity by 1955 than it had at the end of the war, an increase of 70% over prewar figures. Although this rise in production is not as sudden and extreme as that after World War I, it has weakened the elasticity of paper consumption so that excess capacity cannot be absorbed as quickly as it has been in the past. During the 1920's paper consumption led real disposable income and population increases by substantial margins, but the market is now advancing only slightly more rapidly than individual expendable income. The industry must learn to expand facilities only in product areas in which it is sure the new production can be marketed. Paper used for printing and supplies (office, school, and personal), representing 35% of total paper consumption in 1951, has not maintained previous rates of increase since 1929; paper used for packaging (45% of consumption) shows evidence of declining rates; paper for industrial, construction, and other uses (20%) gives no indication of change in rate of increase. Until a new opportunity for service such as that offered by the development of mass distribution comes along, the paper industry must be content with servicing what it has created, with fringe developments, and with expanding a multiplicity of small uses. 2 tables and 6 charts. L.C.

EWELL, RAYMOND H. Regional markets for chemicals. Chem. Eng. Progress 48, no. 11: 578-84 (November, 1952).

The author cites three methods for determining regional data on the consumption of chemicals: by direct survey, by means of a unit-consumption

factor, and by regional fraction, the principal subject of the paper. As an example of regional fraction, he presents a table based on four economic factors (region, population, personal income, and total manufacturing production value) and broken down into 38 major industries (including the pulp, paper, and board industries) and their production figures. An interpolation of these figures produces two additional sets of data. Such information may be used by chemical companies for locating new plants, district sales offices, and bulk storage facilities, or for selecting transportation media. All data are derived for regional purposes from readily available government statistics. 4 tables and 35 references. L.C.

GRAHAM, CHARLES R. A market analyst looks at chemical trends in pulp and paper. Paper Ind. 34, no. 8: 977-9 (November, 1952).

The author discusses the possible changes in chemical requirements by the Canadian pulp and paper industry by considering recent developments and present trends, such as upgrading of groundwood pulp, semichemical pulping of hardwoods, modifications of the sulfite process, superbleaching or upgrading of chemical pulps, and the tremendous expansion in the sulfate industry. Some of these changes are in the initial or even experimental stage, so that it is impossible to assess how far reaching they will be or, in some cases, which specific chemicals will be used for particular purposes. However, it is certain that they will alter, increase, or in some cases decrease the chemical requirements of the industry. E.S.

MATERIALS HANDLING

ANON. Materials handling at Mengel. Fibre Containers 37, no. 10: 60 (October, 1952).

The effective use of lift trucks in all phases of handling raw materials and finished and semifinished products at the Louisville, Ky. plant of The Mengel Co., Inc. is described. 6 figures. E.S.

ANON. The problem of mechanized handling in woodyards. Allgem. Papier-Rundschau no. 20: 906-8 (Oct. 27, 1952). [In German]

This is a study of the applicability and economics of mechanized wood handling for German conditions where small and medium-sized woodyards prevail. The results of extensive time and motion experiments showed that, in any woodyard with a minimum daily turnover of 250 cu. m., mechanization leads to reductions in cost. However, smaller woodyards can profitably replace certain types of manual operations with mechanized equipment. 2 figures. E.S.

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Materials Handling Committee.* Air cylinder and ramp for rolls from winder to header. Pulp Paper Mag. Can. 53, no. 11: 125 (October, 1952).

The installation for lifting and conveying newsprint rolls from winder to header at Baie Comeau is described; it is intended primarily to assist workers employed on horizontal finishing-room floors. 2 figures. E.S.

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Materials Handling Committee.* Handling sheet and wet-lap bales

from storage to carrier. Pulp Paper Mag. Can. 53, no. 11: 119-22 (October, 1952); *cf.* B.I.P.C. 22: 589.

The methods employed in the handling of sulfite and groundwood bales from storage piles to flat cars, transportation to the wharf, loading on lakers, and stowage on board ship at Baie Comeau, and the labor and manhours required for the different manipulations are described. 1 table and 2 figures. E.S.

CANADIAN PULP AND PAPER ASSOCIATION. *Technical Section. Materials Handling Committee.* "Kicker" for rolling paper rolls off conveyor. Pulp Paper Mag. Can. 53, no. 11: 122-3 (October, 1952).

Useful directions are given for obtaining the most efficient operation and performance of a diagonal belt or kicker for the mechanical removal of newsprint rolls from a conveyor. 1 diagram. E.S.

MATERIALS OF CONSTRUCTION

HORIGAN, DANIEL L. Corrosion-resistant metals for pulp and paper industry. Paper Trade J. 135, no. 20: 261-2, 264-71 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine; the article is in three parts: (I) forms of corrosion; (II) corrosion-resistant metals; and (III) applications. 3 tables, 17 figures, and 2 references. E.B.

MILL MANAGEMENT

MILLER, A. J., JR. People have a place in your planning. Tappi 35, no. 11: 10A, 12A, 14A, 16A (November, 1952).

The author approaches the problem of the effect of extreme mechanization on people from two standpoints: better adjustment of men to machines, or rebuilding of the machine environment to fit the needs and personalities of the men. He advises industrial designers to put the human factor into everything they plan and to work closely with personnel men, safety experts, etc., before making major changes which will cause unhappiness and great inconvenience to the workers. L.C.

RUDGE, FRED. Can foremen "teach economics" to employees? Paper Trade J. 135, no. 19: 15-16, 18 (Nov. 7, 1952).

Employees in search of the "reasons why" behind foremen's directives can better understand management policies with a background in the economic facts about their company and the industry. Questions which concern job security, opportunities for advancement, improvement of social status and the like, as well as those in respect to maintenance, sales, and management procedures can be answered intelligently by foremen who have a background in such facts. The preparation of foremen for economic education and the overcoming of their resistance to "teaching" are discussed, and the principles of sound communication of such material to employees are given. L.C.

OILS AND FATS

RUSTON, N. A. Commercial uses of fatty acids. J. Am. Oil Chemists' Soc. 29, no. 11: 495-8 (November, 1952).

Following a brief outline of the manufacture of fatty acids, their important end uses are discussed, including paper and paper products. The principal

fatty acid employed for this purpose is stearic acid in coatings; in addition, oleic acid finds use as a defoamer in paper manufacture. 3 figures. E.S.

SVENSKA SKIFFEROLJE AKTIEBOLAGET. The Swedish shale oil industry. Svensk Papperstidn. 55, no. 16½: 644-7 (Kongressnummer, Sept. 4, 1952). [In Swedish]

Sweden's most important shale quarry at Närke and methods of oil recovery are described. 4 tables. E.S.

PACKAGING

ADAMS, D. S. Unitized loading of chipboard. Pulp Paper Mag. Can. 53, no. 11: 124 (October, 1952).

A simplified method of palletization without pallet or skid is described. 2 figures. E.S.

ALFORD CARTONS, *Ridgefield Park, N.J.* Apple carton cuts spoilage. Am. Boxmaker 41, no. 9: 24 (September, 1952); Packaging Parade 20, no. 238: 20 (November, 1952); Fibre Containers 37, no. 10: 84 (October, 1952); Paper Trade J. 135, no. 8: 14 (Aug. 22, 1952).

"Fanci-Pak," a new consumer package to hold six or eight selected apples, has been developed for supermarket vending. In addition to its worth as an advertising medium, the partitioned package offers protection value in shipping cases and on the counter. 1 illustration. L.C.

ANON. Oil in a carton. Verpackungs Rundschau no. 10: 388 (October, 1952). [In German]

The substitution of metal cans by paperboard cartons for olive oil in Italy is described. The carton is provided with a neutral lining which prevents flavor or chemical changes of the contents. The oil will keep several years in the new package; however, it should not be stored in moist places. 2 figures. E.S.

BALKEMA, E. H. Soap packaging. J. Am. Oil Chemists' Soc. 29, no. 11: 541-5 (November, 1952).

The author emphasizes the importance of packaging in merchandising goods in general and with particular reference to bar soap and flake, spray, and granulated soap products. The different stages involved in producing a proper functional package with sales appeal are discussed, including economy and protection afforded by packaging materials, specifications, printing, color control, and suitability for packaging machinery. E.S.

DANNON MILK PRODUCTS COMPANY, *New York.* Millions in yogurt. Modern Packaging 26, no. 3: 130-1 (November, 1952).

The company has expanded its market by adopting standard eight-ounce, paraffin-finish, round, nesting paper containers for its yogurt. The use of paper cartons required finding a new milk fermentation process which could take place in paper rather than in glass, because the elimination of re-use bottles which required deposite charges was considered necessary. Kraftboard shipping trays are used for stacking the paper containers for shipment. Filler-capper machines adapted both to cartons and to a limited production of bottle stock are described. 3 illustrations. L.C.

GOLTZ, GÜNTER. Packaging refrigerated and frozen goods for storage. Verpackungs Rundschau no. 6: 218-20 (June, 1952). [In German]

A review of American practices is presented. 12 references. E.S.

KLINGELHÖFFER, HANS. Desiccant packaging. Verpackungs Rundschau no. 9: 330, 332-6 (September, 1952). [In German]

The purpose and application of desiccant packaging, types of desiccants, and calculations for determining the required quantities are described. 3 tables, 10 figures, and 3 references. E.S.

MARATHON CORPORATION, and INTERNATIONAL PAPER COMPANY. Bulk ice cream packaging innovation result of research by two companies. Packaging Parade 20, no. 238: 19 (November, 1952).

Rigid Square-Pak, a 3.5-gallon square container for bulk ice cream has been developed by the two companies from a specially designed strong corrugated paperboard with a wax-treated, bleached kraft liner. Three flat parts, the square container, a bottom insert, and a separate top form a cube which may be printed in one or two colors. The advantages to ice-cream manufactures and retailers of the square container over the conventional drum type are listed. 1 illustration. L.C.

MODERN PACKAGING. Swedish design. Modern Packaging 26, no. 3: 124-6, 202 (November, 1952).

Swedish packagers use bleached sulfite paper laminated to heavy sulfite cartonboard as their principal folding-box material, thereby producing high quality cartons which are fabricated from single pieces, scored and die cut to permit rapid setting up by hand. Several of the best-designed boxes are illustrated and described, and Swedish market conditions which allow rather extravagant packaging are discussed. 9 illustrations. L.C.

MOTOR PRODUCTS CORPORATION, *North Chicago, Ill.* Where processing is merged with packing operation. Packaging Parade 20, no. 238: 112-15 (November, 1952).

The straight-line conveyor system employed by this company to manufacture, assemble, and package refrigeration units is described. All operations are executed on a continuously moving line which handles the equipment in a horizontal or vertical position as necessary. The conveyor has a special device for righting horizontal units without disrupting the continuous process. Packaging operations and materials are fully described. 13 illustrations. L.C.

MÜHLENBEIN, K. J. The best arrangement of cartons in a shipping container. Verpackungs Rundschau no. 6: 215-16 (June, 1952). [In German] *cf.* B.I.P.C. 21: 859.

Different possibilities exist for placing a certain number of individual cartons inside a shipping container; not all of these are appropriate and the majority are extravagant with regard to their requirements for packaging materials. Calculations and formulas are presented for determining the most economical combinations of units for a given case. 4 tables, 2 figures, and 2 references. E.S.

SCHOPPMEYER, W. Keeping consumer packages fresh. Neue Verpackung 5, no. 8: 193-6 (August, 1952). [In German]

The following requirements of consumer packages must be fulfilled to ensure their keeping qualities during storage: the materials must be water-vaporproof, bacteria- and moldproof, airtight, aromaproof, and lightproof; of these water-vaporproofness is of prime importance. Greaseproofness is considered very briefly as outside of the scope of this discussion. Available packaging materials (treated papers and board, aluminum foils, plastic films, and combinations of these materials) and methods of closure for meeting these requirements are discussed, with particular reference to the German Eco package (*cf.* B.I.P.C. 21: 177). E.S.

PACKAGING—OPENERS

MINNESOTA MINING AND MANUFACTURING COMPANY. Pull the tab. Boxboard Containers 70, no. 719: 47-50 (November, 1952); Packaging Parade 21, no. 240: 96-9 (January, 1953).

The company has developed "the tear strip method" whereby heavy-duty fiberboard cartons can be opened by a ¼-inch zip tab of the sort used on cigarette packages. A special machine designed by the company and H. G. Weber Co. to apply the rayon and rubber pressure-sensitive tape consists of a shuttle conveyor section, the taping mechanism, and a take-off conveyor with a speed of 400 board feet per minute. The application of the tear strip and the properties of the tape are discussed. 15 illustrations. L.C.

PAPER—COATED

BEARCE, NORMAN. Paper coating. Paper Trade J. 135, no. 20: 428, 430, 432-3; discussion: 433-4 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 329.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 3 tables, 2 figures, and 8 references. E.B.

DAVIS, HARRY G. Paper coating. Paper Trade J. 135, no. 20: 417-18, 420-7 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 329.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 34 figures and 5 references. E.B.

PAPER—COEFFICIENT OF FRICTION

BROUGHTON, GEOFFREY, and GREGG, JOAN L. Some observations on the kinetic coefficient of friction of paper. Tappi 35, no. 11: 489-93 (November, 1952).

Little systematic work on the kinetic coefficient of friction of paper appears to have been done. In the present work, the friction meter developed by E. C. Dreby (*cf.* J. Research Natl. Bur. Standards 31: 237-46 [1943]) has been adapted to paper. The coefficient of friction was found to increase with increasing relative humidity, beating, rosin content, and filler content. It decreased on medium calendering with the addition of fats and paraffin. Different furnishes showed friction coefficients which varied considerably. The cross direction also showed a higher coefficient than did the machine direction. Gloss and surface roughness measurements were also made upon some of the papers studied. 7 tables, 8 figures, and 5 references. E.S.

PAPER—CONVERSION

STILLWELL, CHARLES W. Paper converting. Paper Trade J. 135, no. 20: 446, 448-9 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. E.B.

STOAKES, HAROLD R. A brief history of twenty-five years of paper converting. Am. Paper Converter 26, no. 11: 27-84 (November, 1952).

The author describes developments in the converting industry from 1927 to 1951, handling the years in groups of five. He relates the progress to the paper industry as a whole and ties it in with the national scene. Advertising is interspersed throughout the article. L.C.

PAPER—FILLERS

CASEY, ROBERT J. Fillers and loading. Paper Trade J. 135, no. 20: 301-5 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 329.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 5 tables and 8 illustrations. E.B.

WILLETS, WILLIAM R. Paper fillers. Paper Trade J. 135, no. 20: 306, 308-13 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 329-30.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 table and 12 illustrations. E.B.

PAPER—OPTICAL PROPERTIES

FAVIS, D. V., ROBERTSON, A. A., and MASON, S. G. The heterogeneity of paper. I. Statistics of fluctuations in optical transmission. Can. J. Technol. 30, no. 10/11: 280-93 (October-November, 1952).

The variations in transmission coefficient of small areas (2.3 mm. diameter and less) of a variety of papers have been studied by analysis of continuous traces. The standard deviation and number of zeros have been determined by the direct, length-integration, pulse-counting, autocorrelation, and distribution of gradients methods. The statistical parameters determined by the various methods are self-consistent and provide proof of the applicability of the Rice theory of random noise (*cf.* Rice, S. O., Bell System Tech. J. 23: 282-332 [1944]; 24: 46-156 [1945]). The establishment of the basic statistical principles of analysis thus provides a choice of possible instrumental methods for rapidly measuring the uniformity of paper. 4 tables, 5 figures, and 14 references. E.S.

FAVIS, D. V., ROBERTSON, A. A., and MASON, S. G. The heterogeneity of paper. II. Measurement and significance of optical heterogeneity. Can. J. Technol. 30, no. 10/11: 294-302 (October-November, 1952).

The coefficient of variance of optical transmission (v) has been measured for various paper samples, chiefly handsheets. The samples were formed from fiber suspensions of varying concentration, temperature, average fiber length, and degree of settling. The effect of these factors on v was found to

agree with predictions based on earlier studies of fiber aggregation in suspensions. The samples were subjected to standard physical tests. The results show a small but significant increase in strength and an appreciable improvement in printability as v decreases. 1 table, 8 figures, and 6 references.
E.S.

PAPER AND PULP INDUSTRY

AMERICAN PAPER CONVERTER. Paper production triples during quarter of a century. Am. Paper Converter 26, no. 11: 18-20, 108 (November, 1952).

The production of paper and other pulp products rose from eight million tons in 1927 to 25 million in 1951 in spite of depression, war, and postwar conditions, temporarily disrupted markets caused by the failure to adjust at first to expanded Southern production, and periods of labor shortage. A summary of converted paper production totals in various breakdowns is given in tabular form, chiefly for the period 1927-47. An optimistic outlook on the industry's well-being is emphasized. 20 tables. L.C.

ANON. The provision of the Netherlands with forest products. Norsk Skogind. 6, no. 10: 294-9 (October, 1952). [In Norwegian]

Statistical data for the production and imports of lumber, pulp, paper, and board (exclusive of strawboard) in the Netherlands are given. 9 tables.
E.S.

BROKELBANK, J. H. Saskatchewan now approaches realization of pulpwood industry. Pulp Paper Mag. Can. 53, no. 11: 94 (October, 1952).

Latest forest inventory figures from the Department of Natural Resources reveal that the province of Saskatchewan has at least 16,000,000 cords of white and black spruce and 24,000,000 cords of softwoods in general available for pulpwood; inventory has been taken in areas within economic distance of railroad shipping points. The province has adequate potential water power and other sources of economical power, including bunker fuels, cheap coal, and possibly natural gas in the near future. Any type of mill located in the province is assured of adequate supplies. 1 map. L.C.

GONDHALEKAR, G. H. Hand made paper industry. Indian Pulp and Paper 7, no. 3: 185-91 (September, 1952).

Following a brief history of the introduction of papermaking into India and the development of the handmade industry which flourished until the middle of the 19th century, the causes of its decay are discussed. The principal reason is the utter lack of technical improvement during the 600 to 700-year period; the methods and techniques remained practically unchanged during this time. The substitution of waste paper for the previously used native raw materials and the lack of patronage, guidance, and encouragement from the British rulers were further causes of the deterioration of the Indian cottage industry. Attempts by the All India Village Industries Association for a rejuvenation of the industry during 1934-46 are recorded, as well as the reasons why the temporary wartime boom did not survive the cessation of hostilities. The present position, with its complex economical and psychological problems, is described and an outline for future development is given. The author suggests the organization of medium-sized papermaking units or home units for the manufacture of high-grade paper or home units for common grades, with central or state financial aid; the government should

also establish research centers for assessing the suitability of various local raw materials and training centers for providing the necessary instruction to workers. The task of reorganizing the cottage industries is considered an enormous one. 12 references. E.S.

U. S. FOREST SERVICE. Possibilities for development of the pulp and papermaking industry in Alaska. Tappi 35, no. 11: 38A, 40A, 42A, 44A, 46A, 48A (November, 1952).

Timber resources, Forest Service timber-sale policies, and operating conditions in relation to the establishment of pulp and paper manufacturing enterprises on the Tongass National Forest, southeastern Alaska, are described in detail. The topography, climate, population, and distribution of timber species are discussed. Western hemlock, Sitka spruce, western red-cedar, Alaska cedar, and a small percentage of scrub and muskeg prevail; the silvicultural features of each type of forestation are given. The area is further treated under the headings: water-power resources, limestone and coal, logging methods and costs, and forest administration. Tongass Forest promises an estimated daily pulp output of 3000 tons in perpetuity. 1 table and 1 figure. L.C.

PAPER AND PULP INDUSTRY—EDUCATION

BARKAS, WILFRED W. Papermaking courses at the Manchester College of Technology. Tech. Bull. Tech. Sect., Brit. Paper and Board Makers' Assoc. 29, no. 3: 79-84 (June, 1952).

The courses and laboratory facilities of the papermaking section of the University of Manchester are described briefly. 5 illustrations. E.S.

HARTMAN, LARS A. Technical training for the Finnish forest industry. Indian Pulp and Paper 7, no. 3: 193-4 (September, 1952).

The author describes the technical schools for training foremen and technicians and institutes of technology and universities for providing higher education to the required technical manpower of the Finnish wood-conversion industry. E.S.

PAPER AND PULP MILLS

MCHALE, W. L. The paper industry and the Southland mill. Newsprint Service Bur. Bull. no. 415: 2-3 (August, 1952); *cf.* B.I.P.C. 19: 328.

The author describes the construction of the first newsprint mill in the South at Lufkin, Texas to make this type of paper from southern pines, preliminary development work, and early problems of the original mill. The present integrated unit consists of a groundwood mill, a kraft pulp mill, and two newsprint machines with an average output of 380 tons per day. E.S.

PAPER INDUSTRY. North America's newest newsprint mill in operation. Paper Ind. 34, no. 8: 970-4 (November, 1952); *cf.* B.I.P.C. 23: 192.

The streamlined newsprint unit of the new Elk Falls Co. Ltd. on Vancouver Island is described. 9 illustrations of the mill and its equipment. E.S.

PAPER MILL NEWS. Modernization number. Paper Mill News 75, no. 46: almost entire issue (Nov. 15, 1952).

The survey covers developments (expansion or modernization or both) at the following mills; only the more important features are listed by title: West Virginia expansion costs $16,000,000—15 illustrations, p. 52, 54-6; I-P's $36-million modernization program—1 illustration, p. 58, 60; Dryden increases paper production—6 illustrations, p. 66, 165; Mando completes $29,000,000 expansion—3 illustrations, p. 69-70, 78; C-Z spends 3½ million for improvements, p. 72, 74; Sorg expands converting department—10 illustrations, p. 76, 78; Merritt-Chapman & Scott's Israeli paper mill project moves forward on schedule—1 illustration, p. 82; Beloit participation in mill modernization—4 illustrations, p. 85-6; New mills erected by M C & S—8 illustrations, p. 88, 90, 93-4; Fibreboard program of improvements—4 illustrations, p. 104, 106; $3,000,000 for Consolidated improvements—2 illustrations, p. 108; Brunswick $6,000,000 expansion—1 illustration, p. 116; Riegel Carolina mill making kraft—1 illustration, p. 118; Elk Falls mill starts production—1 illustration, p. 120; Big modernization at Brown Co., p. 123; and Stony Brook expansion final stages—5 illustrations, p. 140, 142. E.S.

PAPER MILL NEWS. $600,000,000 for new mills, new machines, modernization. Paper Mill News 75, no. 46: 62-3, 65 (Nov. 15, 1952); *cf.* B.I.P.C. 22: 264.

The modernization and expansion programs of different U. S. and Canadian mills are listed in alphabetical order of the names of the companies; included are the new mills and new machines which started operation in 1952 or those which are under construction or projected for 1953 and 1954. E.S.

PULP & PAPER. The "new" Deferiet, N.Y., mill. Pulp & Paper 26, no. 12: 60, 62-5, 68 (November, 1952); *cf.* B.I.P.C. 17: 246.

The postwar modernization program in the different departments (woodroom, groundwood mill, coating plant, acid plant, sulfite mill, machine room, and finishing room) of the Deferiet mill of the St. Regis Paper Co. is reviewed. Originally operated as a newsprint mill, the plant was later converted to the manufacture of groundwood printing papers; it now produces machine-coated supercalendered and other grades of groundwood printing papers, particularly directory and catalog papers. Deferiet is also the home of the centralized research and development department of the company, in which the investigative work for the Printing Papers, Kraft Papers, and Multiwall Bag Divisions is consolidated. 28 illustrations of the mill and equipment. E.S.

PAPER SIZING

NEWTON, JOHN M. Starch sizing of paper. Paper Trade J. 135, no. 20: 314-18, 320-1 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 333-4.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 16 photomicrographs. E.B.

PAPER SPECIALTIES

ANON. New possibilities for the application of VPI-paper. Neue Verpackung 5, no. 7: 174-6 (July, 1952). [In German]

The different grades of vapor-phase inhibitor papers, their correct use as inner wrapping material, and various applications are described. VPI papers are outstanding in their protective effect for steel and other iron compounds; however, they are not suitable for rubber articles or those containing rubber derivatives. Plastics in general are not affected unless they contain rubber as, for instance, Pliofilm. E.S.

ANON. Silicones for packaging sticky items. Fibre Containers 37, no. 3: 77-80 (March, 1952).

This is a discussion of the possibilities of silicone-treated papers and boards with excellent release properties to tacky materials, like rubber, resins, and asphalts. In the first part, J. F. Thompson describes the development of a process of applying silicone coatings (Dow DC 1107 silicone) and some of the products which his company (Minerva Wax Paper Co.) manufactures, including kraft papers to be used as liners, interleaving sheets, or multiwall bags. In the second part, Dow Corning Corp. describes some of the physical and chemical properties of DC 1107 which is highly water repellent (for a certain length of time), as well as nonadhesive, odorless, colorless, noncorrosive to metals commonly used in machinery and equipment, and nontoxic. Kraft, parchment, and glassine have been successfully treated; the possibilities of paperboard treatment are indicated. Formulas for solvent and emulsion solutions and methods of application are given. Polymer Industries, Inc., New York has developed an aqueous adhesive known as Polybond D-306 which will bond silicone-treated paper or board either to itself or other surfaces. 2 illustrations. E.S.

ENGEL, KURT. Raw materials and manufacture of leatherette paper, paper-base leather, and leather fiber. Wochbl. Papierfabr. 80, no. 19: 703-4 (Oct. 15, 1952). [In German]

The author reserves the term "synthetic leather" for all products using a fabric base. Leatherette paper is a coated, lacquered, and embossed paper with a grain simulating genuine leather. The requirements of the base paper are the same as those of any good-quality coated paper, particularly with regard to uniform formation and the absence of weak spots. The furnish for the lower grades may consist of 60% groundwood and 40% chemical pulp, whereas a tougher base is needed for better qualities (deep embossing) which is sometimes prepared with the addition of a certain percentage of rag pulp. Synthetic resins are frequently used for lacquering. Most leatherette papers are laminated to board so that their strength is not of prime importance. Paper-base leather, on the other hand, is used alone. It is made by impregnating absorptive filter paper with natural or synthetic latices and then lacquering the resulting product like other leatherette papers. The wet strength of the absorptive base can be considerably increased by the addition of wet-strength resins (urea, polyethylenimine), without impairing its absorptivity. Leather fiber consists of pulped scrap leather mixed with paper fibers and binders (latices, synthetic resins) and formed on a wet machine into thick boards; these are principally used for different applications in the shoe industry. E.S.

GRUHN, KURT. Heat-sealing papers. Neue Verpackung 5, no. 7: 169-71 (July, 1952). [In German]

The types of heat-sealing papers and methods of sealing, their applications, advantages, general and special requirements (including their suitability for automatic packaging machinery), and testing of the seams are described. 1 illustration. E.S.

HOWELL, CHARLES M. Sanitary tissues. Paper Trade J. 135, no. 20: 345-54 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 6 tables and 10 figures. E.B.

LIANDER, HALVARD, and BJÖRKMAN, EVERT. Paper as an electrical insulating material. Svensk Papperstidn. 55, no. 16½: 597-601 (Kongressnummer, Sept. 4, 1952). [In Swedish]

The types of electrical insulating papers used in Sweden and the high-quality requirements of the material (absence of impurities, particularly of conducting particles; thickness and porosity within definite, narrow limits; and high uniformity of each grade) are discussed. The quantities required by the entire country in a year can be produced on a modern high-speed machine within a few hours. It would thus seem most economical to concentrate the entire manufacture in one mill. This, however, will not contribute to healthy competition and its beneficial influence upon high-quality standards. 1 table, 5 figures, and 6 references. E.S.

MOISAND, CH. Theoretical and practical views on the manufacture of photographic papers, plates, and films. Papeterie 74, no. 3: 138-9, 141, 143, 145; no. 4: 215-17, 219, 221; no. 5: 285, 287, 289, 291, 293; no. 6: 363, 365, 367, 369, 371; no. 7: 425, 427, 429, 431, 433; no. 8: 487, 489, 491, 493, 495; no. 9: 577, 579, 581, 583, 585; no. 10: 662, 665, 667, 669, 671 (March-October, 1952). [In French]

Following a brief discussion of the glass and cellulosic (acetate or nitrocellulose) films used for photographic plates and films, the principal discussion is devoted to the processes involved in the manufacture of photographic papers, including the properties of the base papers, coating with barium sulfate, drying and calendering, application of the sensitizing emulsions, coating systems in use, drying, winding, cutting to required sizes, inspection under yellow or red light, packaging, taping, the preparation of the different emulsions, and papers sensitized on both sides. 13 figures and 11 footnotes. L.E.W.

"PURITAN." British wood-free papers. Paper Market, Export no.: 68 (September, 1952).

A brief history is given of the development, demand, and applications of wood-free papers—i.e. those manufactured from bleached chemical pulp without any addition of mechanical pulp—and their continued predominant position in the British market is stressed. E.S.

UNION BAG AND PAPER CORPORATION. Waterproof lumber wrap. Paper Trade J. 135, no. 15: 12 (Oct. 10, 1952); Southern Pulp Paper Manuf. 15, no. 11: 78 (November, 1952).

The high cost of building sheds for lumber storage prompted the Genesee Lumber & Coal Co., Batavia, N.Y. to use Scutan waterproof paper for wrapping lumber for outdoor storage. 4 illustrations. E.S.

PHOTOMICROGRAPHY

ANON. A method for the preparation of paper cross sections. Das Papier 6, no. 11/12: 239-40 (June, 1952). [In German]

A number of pieces of paper are gummed together with a universal adhesive (Rudol 333 is recommended); the exact number depends upon the thickness of the paper. It is also possible to paste different types of paper together, if their cross sections are to be compared in the same micro picture. The sheets are then pasted with the same cement between two softwood boards, about 8 mm. in. thickness and with their fibers running parallel to

the direction of the cut. The assembly is dried under light pressure and, after drying, cut with a standard microtome no. 27 (Sartorius Werke AG, Göttingen). The wood is readily removed from the cuts, which may be dyed prior to embedding in glycerin or Canada balsam. 6 figures. E.S.

PHYSICAL TESTING—INK

AYERS, L. R. Evaluating ink resistance to dry rub. Am. Ink Maker 30, no. 11: 29-31, 67, 69 (November, 1952).

The results of a testing program by the Joint Ink-Rub-Test Task Committee are presented which covered the investigation, testing, evaluation, and recommendation to co-operating organizations of the Rubometer (I) developed by the National Printing Ink Research Institute, the Sutherland ink-rub tester (II), and the mechanical rub tester built by the Martinson Machine Co. (III); these three instruments are power driven. An outline of the round-robin series of tests is given, which served as a basis for the evaluation of the results by the Committee. All three instruments were found to represent a distinct improvement over hand-driven rub testers now in general use. There was an indication that all three testers tended to measure the same properties. Although the samples were not always ranked indentically by the three testers, the incidences of agreement were more numerous than those of disagreement. The severity of the rubbing action for a specified number of strokes varied for each of the instruments. Unanimously, (II) was found superior to (I) and (III) for evaluating the rub resistance of folding cartons; it was considered to outrank the two other instruments by a detectable margin on practically all points of evaluation. No mechanical difficulties with (II) were detected during the testing program; all operators preferred this particular tester. It gave test results in the shortest period of time. It is realized that these conclusions are solely based upon the results of the present testing program; however, every effort was made to present a factual and unbiased report. Possible future work is indicated briefly. E.S.

PHYSICAL TESTING—PAPER—FOLDING ENDURANCE

VAN NEDERVEEN, G., and VAN ROYEN, A. H. H. Folding experiments with paper; some new considerations. Paper-Maker (London) 124, no. 4: 316-20, 322 (October, 1952); Paper Market, Export no.: 82, 84, 86, 88, 90, 92 (September, 1952); Industria carta (Milan) 6, no. 11: 123-9 (November, 1952). [In Italian] *cf.* B.I.P.C. 22: 845-6.

It has been shown in the previous paper that, in folding on the Schopper (I) and Köhler-Molin (II) testers, the physical background of the process seems to be the same. A load can therefore be chosen for the (II) test which gives nearly the same figures for the folding resistance as those given by (I). The resemblance is especially close when the logarithms of the folding numbers are compared. The determination of the tensile strength after folding leads to the concept that the folding process consists of two phases: the first phase is possibly a mechanical conditioning (stretching) of the paper, and the second a breakdown of the fiber bonds. The determination of the tensile strength after folding provided the authors with the possibility of setting up a mathematical expression for folding resistance. This formula shows that this property is an exponential function of other paper characteristics and thus explains the large errors in determining the folding number. In addition, it makes plausible that the physically interesting quantity is not the folding number itself, but its logarithm. As the parameters in this formula seem to be related to the suppleness of the fibers and the internal friction in the paper on folding, the folding resistance may be considered to reflect

the structure of the paper. Aging of paper decreases its flexibility, and the folding resistance is very sensitive to this change, whereas the strength of the paper does not depend on it to a great extent. A table is included showing the influence of various factors (thickness, bleaching, R.H., degree of beating, load in folding, and aging) on the parameters of the folding resistance. 1 table, 5 figures, and 5 footnotes. E.S.

PHYSICAL TESTING—PAPER—STIFFNESS

U. S. NATIONAL BUREAU OF STANDARDS. Paper stiffness measured by new NBS development. Paper Ind. 34, no. 8: 952 (November, 1952); Paper & Paper Products 94, no. 3: 15 (Oct. 20, 1952); Paper Trade J. 135, no. 17: 35 (Oct. 24, 1952); Chem. Eng. News 30, no. 45: 4746 (Nov. 10, 1952); Natl. Bur. Standards (U. S.) Tech. News Bull. 36, no. 12: 182 (December, 1952); Paper-Maker (London) 124, no. 5: 400 (November, 1952).

In the new tester for the rapid determination of the stiffness of paper, the left end of the specimen is firmly attached to a clamp suspended between two vertical lengths of piano wire, the outer ends of which are fastened to a torque frame; the clamp at the right holds the specimen loosely so that it can bend freely. When the torque frame is rotated by turning a handle, the pointer indicates on the inner scale the angle through which the paper has been bent, whereas the outer scale shows the torque applied to the wire. From the measured values of torque and bending angle and the dimensions of the specimen, the stiffness value is determined in much the same way as that of a cantilever beam loaded at the free end. By varying the width and length of the specimen and the angle through which it is bent and by using supporting wires of different sizes, instruments of this type could be employed to test papers with a wide range of stiffness and, possibly, thin plastic sheets and similar materials. 2 illustrations in the first reference. E.S.

PHYSICAL TESTING—PAPER—VAPOR TRANSMISSION

SCHRICKER, GERHARD. The accuracy of the dish method for determining the water-vapor permeability of papers and films. Kunststoffe 42, no. 8: 229-31 (August, 1952). [In German]

Evidence is presented to show the influence of certain factors upon the accuracy of the PATRA standard method (*cf.* B.I.P.C. 18: 860) and the similar A.S.T.M. Designation: D 988-48 T (*cf.* B.I.P.C. 19: 182-3) for measuring the WVP of sheeted materials. These factors include the resistances to diffusion inside and outside the dish (caused by the distance between desiccant and material under test, the thickness of the desiccant layer, and the thickness and composition of the material under test) and the properties of the wax compounds used for sealing. The results of the present study show that the required accuracy of ±10 in the standard method holds only for the comparatively narrow permeability range between 1 to 250 g./sq. m./24 hours. Although this is sufficient for many purposes, quite a few of the recently developed films and treated papers exhibit permeabilities lower than 1 g./sq. m./24 hours. For such cases different measuring procedures must be considered. 1 table, 1 figure, and 7 footnotes. E.S.

PHYSICAL TESTING—PULP—SCREEN ANALYSIS

SCHRÖTER, HELMUT. A study of the use and evaluation of the screen analysis of chemical pulps by means of a new classifier. Wochbl. Papierfabr. 80, no. 11: 388, 390, 392, 394; no. 15: 559-63;

no. 16: 595-9; no 17: 631-3 (June 15, Aug. 15, 31, Sept. 15, 1952). [In German]

Although in modern groundwood mills the screen analysis (three fractions) has become a standard method for continuous mill control, the procedure is not applied to chemical pulps, where the time-consuming fiber-length determinations are preferred. Following a brief discussion of the deficiencies of several existing classifiers with regard to the evaluation of chemical pulps, the author discusses the following requirements for an accurate, dependable instrument: The fibers must be kept well suspended and in horizontal motion—i.e., they should never occupy a perpendicular position relative to the screening surface; this is particularly important in the close vicinity of the screen. The quantity of admitted water and its flow must be such that sedimentation of the fibers and plugging of the screen are avoided. The fibers should never adhere to mechanically actuated stirrers or other moving elements; their use should be eliminated. All external influences which impair the constant uniform flow of water must be avoided, including the dead space which exists in the center of a rotating circular screening surface. A new classifier is described in detail which is claimed to present a satisfactory compromise of the above-mentioned requirements. It includes a circular tank and screening surface, no mechanical stirrers, and a cylindrical center piece (I) which occupies the dead space of the screening area. The admitted water is sprayed tangentially against the walls of (I); the optimum conditions of pressure (water admitted per time unit), washing period, dilution of pulp, screen numbers (nos. 5 and 16 were standardized), and head were determined; the mode of operation of the new instrument is outlined. The reproducibility of the results was checked and the method was found suitable for differentiating the fractions of beaten pulps, even in the very slow ranges. The individual fractions obtained by screen analysis were then checked microscopically; the results showed that the usual microscopic determinations of fiber lengths are very subject to personal errors and apt to disregard a certain (variable) percentage of the finest fraction. In the further evaluation of the data obtained by screen analysis, a method for determining the mean fiber length (II) of a given pulp sample from the frequency of the percentages of the different fractions and the preparation of a diagram which permits the direct reading of (II) from the correlation of two fractions (long fibers and finest fraction) are described in detail and supplemented by examples. 6 tables, 9 figures, and 7 references. E.S.

PHYSICAL TESTING—PULP—SHEET MAKING PROCEDURE

FRANK, KARL. A new simplified sheetmaking apparatus and drier. Wochbl. Papierfabr. 80, no. 16: 599-600 (Aug. 31, 1952). [In German]

The expensive construction of the Rapid-Köthen sheetmaking apparatus and the need for trained technical personnel for its operation have prevented its general use in German mills. A simplified, less expensive construction was developed which consists of a sheetmaking and a drier section mounted on a common metal plate. The accuracy and reproducibility of the results are claimed to be satisfactory and in agreement with the data obtained by the German standard method. 1 diagram. E.S.

PHYSICAL TESTING—TAPE TESTER

NEUBRONNER, CARL. Measuring the bonding strength (tack) of gummed papers. Neue Verpackung 5, no. 8: 210-12 (August, 1952). [In German] *cf.* B.I.P.C. 2: 128.

The background, development, and construction of the Neubronner gummed-paper tester (German patent 707,720) are described. The operation of the instrument is by pneumatic pressure and is fully automatic; it can be used for measuring the bonding strength, burst, or tear of the sample. The degree of tack as measured by the instrument is equal to the mean power in grams/sq. cm. required after pasting periods of two and four seconds divided by the mean pressing period of three seconds. A gummed tape is considered unsuitable when the test value has not reached 300 grams/sq. cm. after six seconds. 1 table and 3 figures. E.S.

PITCH TROUBLES

HAGAR, CHARLES N., JR. Some practical considerations in the pitch problem. Paper Mill News 75, no. 47: 20-2, 27 (Nov. 22, 1952).

Following a brief discussion of the origin of pitch in pulp (which is always present, but not always to the same degree of a troublesome state), the author explains the different stages from pulping to papermaking which—through mechanical agitation of some kind—tend to aggravate pitch troubles to a greater or lesser extent. He reviews some of the basic methods of pitch control (thorough washing of pulp, use of dispersing agents, alum, or organic solvents, and thorough weekend cleanups) which may work in one mill and not in another. He emphasizes that in dealing with pitch each mill must carefully study the layout of its own particular system, observe all the signs which give clues, and attempt to take advantage of all the possibilities toward removal or reduction of the trouble. Since no two mill systems are exactly alike, it is evident that the successfully applied remedies of one case may utterly fail in another. This approach to pitch relief is a slow process which must carefully take into consideration the different types of pitch, as well as seasonal and equipment changes which occur at every turn. E.S.

PLASTICS

BECKER, E. Other plastics. Kunststoffe 42, no. 10: 314-15 (October, 1952). [In German]

A brief review of recent advances in the fields of cellulose-derivative plastics, vulcanized fiber, and lignin, furan, and coumarone-indene resins is given. E.S.

PLASTICS—PAPER-BASE

BARBER, R. W. High pressure laminates. J. Forest Products Research Soc. 2, no. 3:123-8 (September, 1952).

The construction, types, performance requirements, and applications of decorative plastics are discussed. 1 table and 5 figures. R.G.K.

HARTMAN, G. B. VON. The manufacture of laminated plastics. Kunststoffe 42, no. 10: 329-31 (October, 1952). [In German]

Recent tendencies in the development of laminated plastics are reviewed, with particular reference to the increased use of decorative plastics. The quality of the paper- or fabric-base materials has been considerably improved, and new materials (glass fiber, Perlon, nylon, asbestos) and new resins (melamine, polyesters) find application. 1 table, 3 figures, and 12 references. E.S.

POWER

ELGÉRUS, CHR. Steam power *vs.* water power, a problem of balance. Svensk Papperstidn. 55, no. 16½: 579-87 (Kongressnummer, Sept. 4, 1952). [In Swedish]

The author outlines the steam and power requirements in the Swedish wood-conversion industry and the factors which have to be taken into account when the most economical method of providing additional capacity has to be selected. Coal prices, steam generation by condensing or noncondensing operation, hydroelectric power, and generated *vs.* purchased power are discussed by means of examples as they might occur under Swedish conditions. 4 tables and 8 diagrams. E.S.

PRINTING AND PRINTER'S INK

REYNOLDS, A. P. The graphic arts. Paper Trade J. 135, no. 20: 464-72 + 4 colored plates (Nov. 14, 1952); *cf.* B.I.P.C. 21: 341.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine; the two articles are not identical. 24 figures. E.B.

PULP

ROLLINSON, RUTH R., and WISE, LOUIS E. A chemical study of the "skinlike substance" of sulphite pulps. Tappi 35, no. 11: 139-40A (November, 1952).

It was the object of the present investigation to study the chemical nature of the "skin substance" from various pulps using, wherever possible, some of the recently developed hydrolytic and paper-partition chromatographic techniques. The copper complex remaining insoluble on treating a bleached coniferous sulfite pulp of unknown origin with cuprammonium hydroxide was decopperized with cold dilute hydrochloric acid. The resulting water-soluble polysaccharide (I) was precipitated with acetone and hydrolyzed with dilute sulfuric acid. The sugars formed were glucose and mannose in the approximate ratio of 1 to 4. Small amounts of uronic acid groups may also have been present. A very similar polysaccharide (II), giving rise to about 20% glucose and 80% mannose, was isolated from a Mitscherlich black-spruce sulfite pulp. Yields of the polysaccharide, which were always small, varied considerably in different experiments (conducted under seemingly identical conditions). This lack of reproducibility in yield remains unexplained. No polysaccharide similar to (I) could be isolated from an aspen sulfite pulp. A slash pine α-cellulose gave very small amounts of a polysaccharide copper complex, which yielded a soluble carbohydrate containing dominantly mannose units, as well as galactose and glucose units (all identified chromatographically). In the case of (I) and (II), the mannose was chemically identified as the insoluble phenylhydrazone and, in the former instance, also as the yellow, crystalline "Blair-Wolfrom derivative," $C_{12}H_{12}O_4N_2$-$(OAc)_4$, melting point 120.5-122°. The work is being continued. 2 tables and 14 references. L.E.W.

PYRITES

BRYDE, ØYVIND. New aspects on the burning of pyrites in the sulfite industry. Svensk Papperstidn. 55, no. 19: 734-44 (Oct. 15, 1952). [In Norwegian]

Recent developments are reviewed, including the Nichols-Freeman furnace,

the Trail furnace, the FluoSolids process, and the BASF (Badische Anilin- & Soda-Fabrik) furnace, and data are given on their operation and efficiency. 7 tables, 10 figures, and 11 references. E.S.

JOHANNSEN, ADOLF. The fluidized roasting method of the Badische Anilin- & Soda-Fabrik. Chem.-Ing.-Tech. 24, no. 2: 104-9 (February, 1952). [In German]

Based on the principle of the water-gas generator invented by Fritz Winkler in 1923 (*cf.* U. S. patent 1,776,876 [Sept. 30, 1930]), the application of the method to the roasting of pyrites developed by members of the Badische Anilin- & Soda-Fabrik is described in detail. 1 table, 3 figures, and 9 references. E.S.

RESEARCH

BARBER, WM. R. About research and development. Paper Trade J. 135, no. 22: 17, 21-4 (Nov. 28, 1952).

The author discusses research, the reasons for its existence, and its meaning in modern business and industrial management. He analyzes the problem of organizing a research department, lists the requisites, and offers suggestions. R.G.K.

KIAER, HANS TH. Technical and other research in Norway. Norsk Skogind. 6, no. 10: 300-5 (October, 1952); Svensk Papperstidn. 55, no. 20: 771-5 (Oct. 31, 1952). [In Norwegian; English summary]

A survey of the research activities in Norway is presented by the chairman of the board of directors of the Forestry and Forest Industries Research Organization (I). Three research councils have been established and one of them (the Royal Norwegian Council for Scientific and Industrial Research) is discussed in detail. The most important task of this organization is the provision of high-caliber education for the necessary research staff and funds for the different research institutes connected with institutes of technology and universities, and the establishment of new research institutes, if and when necessary. In addition, the author describes the research activity within forestry and forest-products industries. (I) is financed by contributions from the different members; it includes the Norwegian Forest Research Institute, the Norwegian Pulp and Paper Research Institute, the Norwegian Institute for Woodworking and Wood Technology, and the Forest Industries Economic Institute. The activities of these institutes are outlined. E.S.

RESEARCH & ENGINEERING COUNCIL OF THE GRAPHIC ARTS INDUSTRY. Ink research. Am. Ink Maker 30, no. 9: 34-6 (September, 1952).

Among the 111 research and engineering programs recently compiled by the Council, 40 are listed dealing with problems of the printing-ink industry. E.S.

RESEARCH LABORATORIES

ANON. International Paper opens research laboratory. Paper Trade J. 135, no. 19: 9-10 (Nov. 7, 1952); Paper Mill News 75, no. 46: 112-14 (Nov. 15, 1952).

A $400,000 laboratory for basic research work in the development of new pulp and paper grades manufactured from southern forests was dedicated

November 6 at Mobile, Ala. by officials of the Southern Kraft Division, International Paper Co. The research building contains a pilot area for making unbleached pulp by any process, a pulp purification area, and three laboratories for the physical testing of paper. Separate areas are also devoted to dissolving pulp, pulp evaluations, and optical, analytical, and general chemical laboratories. The directors of the new department are identified and some of the outstanding equipment features are described. 4 illustrations in the first and 6 in the second reference. L.C.

FARMER, R. H. The work of the Forest Products Research Laboratory. Chemistry & Industry no. 44: 1064-8; discussion: 1068 (Nov. 1, 1952).

The activities of the various sections of the Forest Products Research Laboratory at Princes Risborough, England, are outlined; attention is drawn to the large amount of advisory work which the Laboratory is required to undertake. The chemical aspects of the work are described in greater detail; they include research on the fundamental chemical composition of wood (lignin in particular), the examination of minor components of wood (extraneous substances), and a study of the possibilities of the utilization of some colonial timbers as a raw material for the production of fiberboard. 2 figures. E.S.

SAFETY

ANON. Comprehensive safety at Westvaco's Luke mill. Paper Ind. 34, no. 8: 980-3 (November, 1952).

The safety program of the mill is outlined. 9 illustrations. E.S.

NICHOLSON, G. W. E. Management's function in the safety program. Paper Trade J. 135, no. 19: 19-20 (Nov. 7, 1952); Southern Pulp Paper Manuf. 15, no. 12: 58 (December, 1952).

The success or failure of any safety program depends upon the plant manager and the foreman who must know the hazards of their industry and be able to impart safety consciousness to workers. The factors necessary to a good safety program are described. L.C.

SALESMEN AND SALESMANSHIP

FRANKLIN, S. W. What's wrong with my business, or could it be me? Paper & Twine J. 26, no. 8: 11, 24-5; no. 9: 10-11, 22-5 (October, November, 1952); Paper & Paper Products 94, no. 3: 8-9 (Oct. 20, 1952); Paper Trade J. 135, no. 26: 26-8, 30 (Dec. 26, 1952).

Proper training of salesmen increases sales production, reduces selling costs, attracts better salesmen, reduces sales personnel turnover and the need for close supervision, improves employee morale, eliminates selling misfits, and insures good buyer-seller relationships. The author describes a two-part training program which comprises: (1) the "inside" aspects during which the trainee acquires knowledge of the products and learns the theories of selling approach; and (2) the "outside" aspect during which the trainee attempts actual selling under the guidance of a trainer. The principles of good salesmanship are set forth. 3 illustrations. L.C.

LINEBARGER, CHARLES E. Hire your salesmen by science—not by guess. Parts I and II. Am. Paper Merchant 49, no. 10: 20-1, 62-3; no. 11: 24-5, 58 (October, November, 1952).

Benge Associates, a personnel research group, was commissioned by the Paper and Twine Association in 1948 to spend a year in studying paper salesmen and setting up a battery of aptitude, interest, and personality tests to aid the judgement of interviewers in selecting new salesmen. A special set of tests based on the requirements of the paper industry was formulated and distributed to 60 paper merchants who have been using it since then as the sole basis for hiring. A 92% efficiency is credited to the program. The initial research and the present operation of the service are described. 1 illustration in the first part and 1 tabular score summary in the second.
L.C.

SEMI-CHEMICAL PULPING PROCESS

CENTOLA, G., PANCIROLLI, F., and CERAGIOLI, G. The cooking of annual plants with lime and sulfur. Industria carta (Milan) 6, no. 8-9: 89-95 (August-September, 1952). [In Italian; French and English summaries]

The authors describe a series of experimental semichemical cooks with annual plants, such as esparto, straw, bagasse, papyrus, and banana fiber, in which either lime alone or with a small addition of sulfur was used; the results are presented in a number of tables. The presence of elemental sulfur in the liquor facilitated the liberation of the fibers from the vegetable matter, as shown by the lower lignin content and lesser amount of screenings of these pulps. In addition, they are more readily purified by succeeding alkaline treatments and the bleached pulps, as a rule, exhibit better strength properties. The bad odor associated with the spent liquor and the pulps may probably be traced to the formation of thiolignins during the lime-sulfur cook which are more readily soluble than the lignin itself. The action of the sulfur during a lime cook of annual plants must be considered qualitatively the same as that exerted by a soda cook. To obtain better disintegrated lime-sulfur pulps, the use of Pulpmasters or Hydrapulpers may provide a solution. On account of their obnoxious odor, lime-sulfur pulps are not suitable for papermaking. However, interesting possibilities exist for two-stage treatments (lime and soda). The principal purpose of these patented processes is the reduction in alkali consumption; in addition, they permit the production of small batches of semifinished products which might later be centralized in a large mill for the final processing. 11 tables, 1 diagram, and 17 references.
E.S.

KRASKE, WILLIAM. Neutral sulfite semi-chemical pulping. Paper Trade J. 135, no. 20: 173-9 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 345.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 2 tables and 1 flowsheet.
E.B.

MCGOVERN, JOHN N. Neutral sulfite semichemical pulping. Paper Trade J. 135, no. 20: 179-84 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 345.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 5 figures and 3 references.
E.B.

SHIPPING CONTAINERS

DOUGLAS FURNITURE CORPORATION. Pre-packaged furniture. Modern Packaging 26, no. 3: 127 (November, 1952).

Heavy corrugated shipping cartons printed in three colors and sealed with cloth-backed pressure-sensitive tape have been adopted by the company for the individual packaging of complete dinette sets. The three types of carton used to pack the disassembled sets are described, and the advantages and sales appeal of the new cartons are discussed. 2 illustrations. L.C.

GAYLORD CONTAINER CORPORATION. New Gaylord chick box. Fibre Containers 37, no. 10: 85 (October, 1952); Southern Pulp Paper Manuf. 15, no. 11: 84 (November, 1952).

A new stitched, rigid, all-corrugated chick box holding up to 100 chicks is described; it is shipped knocked down and assembled by snapping partitions into precut slots where they are held in position by a crimping flap. A corner protector and a simplified lock to hold the lid firm are other features. The container meets stacking requirements for train, plane, or truck shipment. 2 illustrations. E.S.

GERSHILL, B. Corrugated board containers. Tappi 35, no. 11: 133-6A (November, 1952).

The manager of a South African firm of canners and packers—for the purpose of setting up appropriate specifications—asks for information on the material requirements and structural design of corrugated containers for shipping canned foods in the United States, including the relative merits of cylinder and Fourdrinier kraft paper, the weights in use, equipment for making tests, size of flute employed, the use of bottom stitching or gluing, and the advisability of metal strapping. Several answers are appended. 2 tables. E.S.

NATIONAL CONTAINER CORPORATION, *Jacksonville, Fla.* New strength. Am. Boxmaker 41, no. 9: 21 (September, 1952); Southern Pulp Paper Manuf. 15, no. 11: 82 (November, 1952).

A two-compartment 60-pound tomato container of corrugated kraft sufficiently strong to support 800 pounds has been developed by the company to replace more expensive, heavier wooden boxes. Double thicknesses of tough kraft on the bottom, sides, and ends allows six- and seven-high stacking for truck shipment and three- and four-high for railroad shipment. Packers have reported shipping-cost savings of between 12 and 17 cents per box. 1 illustration. L.C.

SHELTON MANUFACTURING COMPANY, INC., *Newark, N.J.* Mailing box requires no sealing. Paper Trade J. 135, no. 8: 14 (Aug. 22, 1952); Paper & Paper Products 93, no. 24: 15 (Sept. 5, 1952); Am. Boxmaker 41, no. 9: 27 (September, 1952); World's Paper Trade Rev. 138, no. 9: 660 (Aug. 28, 1952).

A new double-face corrugated container for books is described; it can easily be adapted to any product mailed in quantity. The use of tubular walls which, in turn, have additional strength by the wrapping of still another layer of corrugation when closed, provides four-way protection to the articles inside; exceptional cushioning qualities, quick folding, and secure closing are also claimed. 2 figures. L.C.

SPECIFICATIONS

FOOD ENGINEERING. "Spelling out" carton specs. Food Eng. 24, no. 9: 78-9 (September, 1952).

Time-saving, cost-cutting methods are described for the ordering, inspection, storage, and evaluation of packaging materials, especially as used in the food packing industry. An illustration of a folding-carton specifications sheet is included to show the detailed data of a thoroughly prepared order; it takes into account both supplier and packager production factors. L.C.

STARCH

PREECE, I. A. Starch and its products of amylolytic degradation. Progress in Organic Chemistry 1: 248-79 (1952).

The review covers the period from approximately 1937 to date, although some earlier work is also mentioned. 100 references. E.S.

STATISTICAL METHODS

COMPTON, ELL DEE. Significance of laboratory sizing data. Tappi 35, no. 11: 518-27 (November, 1952).

Laboratory paper sizing data are used to illustrate some of the pitfalls which may be encountered in the interpretation of such data. The utility of a simple experimental design and analysis of variance in such work is illustrated by using actual laboratory data. 9 tables, 3 figures, and 7 references. E.S.

STEAM POWER

FRILUND, HARALD. Why are higher steam pressures and temperatures used in the most recent power plants constructed in Finland? Paper and Timber (Finland) 34, no. 10: 377-81 (October, 1952). [In Swedish; English summary]

The author discusses the reasons why the five steam power plants at present under construction in Finland are raising their steam pressures from 35 to 64 atm. and their temperatures from a maximum of 450°C. to 480-500°. Accurate calculations in every individual case have shown that these increases are economically justified, whereas still higher pressures and temperatures increase initial costs and complicate the installations. 3 tables, 2 diagrams, and 3 references. E.S.

SUGARS

WOLFROM, M. L., and DACONS, J. C. The polymer-homologous series of oligosaccharides from cellulose. J. Am. Chem. Soc. 74, no. 21: 5331-3 (Nov. 5, 1952); *cf.* B.I.P.C. 19: 539.

A polymer-homologous series of crystalline α-D-acetates obtained from cellulose by acetolysis and chromatographic resolution has been extended to include the acetate of the heptasaccharide member. The parent sugars of the acetates from the tri- through the heptasaccharide were obtained, characterized, and compared with sugars of this series reported previously. The crystallinities of the members of both the unsubstituted sugar and the acetate series have been studied by photomicrography and x-ray powder diffraction. From the cellotetraose on, the unsubstituted members exhibit the x-ray diagram characteristic of cellulose hydrate. The crystallinity decreases as the series is ascended, but all members exhibit some degree of order. The incipient hydrolysis constants in 51% sulfuric acid at 30° were evaluated for cellopentaose and cellohexaose. 1 table, 1 figure, and 22 footnotes. E.S.

SULFATE MILLS

FIBRE CONTAINERS. Riegel Carolina—South's newest pulp mill. Fibre Containers 37, no. 10: 65-6, 68 (October, 1952); *cf.* B.I.P.C. 22: 860.

The new 200-ton bleached sulfate mill is described. 5 illustrations. E.S.

PULP AND PAPER. Riegelwood's story. Pulp & Paper 26, no. 12: 44-6, 48, 50, 52, 54, 56, 58, 106, 108 (November, 1952); *cf.* B.I.P.C. 22: 860.

A detailed description of the installations and operations of the different departments of the new sulfate mill of Riegel Carolina Corporation at Riegelwood, near Acme, N.C. is presented. 45 figures. E.S.

SULFITE PROCESS

HARLOW, FRANK. Sulfite pulping. Paper Trade J. 135, no. 20: 169-73 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 353.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 table and 4 diagrams. E.B.

MILLER, R. N. Cooking sulphite pulp. Paper Trade J. 135, no. 20: 164, 166-9 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 301-2.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 diagram. E.B.

WURZ, OTTO. Modern operating methods in Scandinavian sulfite mills. Das Papier 6, no. 21/22: 457-64 (November, 1952). [In German]

The author reviews installations and developments in the Scandinavian sulfite industry, including wood preparation, acid making, cooking, stock preparation, bleaching, wet machines, recovery of the spent liquor, heat and power economics, and general. 8 figures. E.S.

SULFITE WASTE LIQUOR

SILLÉN, GUNNAR, and ANDERSSON, TORSTEN. Solid-gas equilibria of importance in burning concentrated calcium or magnesium sulfite waste liquor. Svensk Papperstidn. 55, no. 16½: 622-31 (Kongressnummer, Sept. 4, 1952). [In English]

The equilibria between gas and ash—when calcium or magnesium spent sulfite liquor is burnt under various conditions—are discussed with special emphasis on the recovery of sulfur. Logarithmic diagrams are used where the equilibrium pressure of each gas is plotted as a function of the equilibrium pressure of oxygen. For convenience, the symbol $rO = -\log p_{O_2}$ has been introduced, analogous to Clark's rH. These "rO diagrams" are easily constructed and give a good survey of the equilibria. With calcium base, the recovery as calcium sulfate is easily achieved but does not seem attractive. The sulfur can be recovered either as sulfur dioxide in the gas or as calcium sulfide in the ash. The suitable ranges of temperature and excess or deficit of oxygen (expressed as a percentage) are given in a diagram. Uncertain factors in both cases are the rate of attainment of the equilibrium and the rate of secondary reactions on cooling the ash or gases. With magnesium

base, all sulfur can be obtained in the gas (as sulfur dioxide or hydrogen sulfide) under a very wide range of conditions. It does not seem possible to obtain magnesium sulfide by combustion. 1 table, 11 figures, and 12 references. E.S.

SULFUR

ANON. 20-ton-per-day sulfur recovery plant operating at profit in Texas. Chem. Processing 15, no. 11: 42-3, 47 (November, 1952).

The sulfur recovery plant from amine-type desulfurizer acid gas—a joint venture of the Sid Richardson Carbon Co. and the Odessa Natural Gasoline Co. near Odessa, Texas—is described. About 20 tons of sulfur in flaked or molten form are recovered by a modified Claus process. Automatic control and novel methods of material handling have cut labor requirements to three manhours per day and make possible the recovery of the sulfur (99.977% pure) at a profit in spite of the small quantities involved. 1 table and 3 illustrations. E.S.

SULFUR DIOXIDE

UEBRICK, EVERETT C. Sulfite pulping, sulfur dioxide preparation. Paper Trade J. 135, no. 20: 153-7 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 301.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 4 figures. E.B.

TALL OIL

PERKINS, KARL A. Tall oil finds new uses in coatings. Chemurgic Digest 11, no. 11: 4-5 (November, 1952).

The use of tall oil esters with different modifiers in the organic coatings industry is described, including maleic anhydride, phenol-formaldehyde condensates, phthalic alkyds, and Epon 1004 (a condensation product of bisphenol and epichlorhydrin produced by Shell Chemical Corp.) E.S.

TALL OIL ASSOCIATION. Tall oil in flotation processes. Tall Oil in Ind. Bull. no. 11: 4 p. (October, 1952); *cf.* B.I.P.C. 23: 53.

The principle of flotation and the possibilities of tall oil as a very low-cost reagent for processing minerals and industrial wastes are outlined. 9 references. E.S.

TESTING, GENERAL—PAPER

FORMAN, LOREN V. Paper testing and specification. Paper Trade J. 135, no. 20: 439-45 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 356.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 4 references. E.B.

KING, JOSEPH. Paper testing and specifications. Paper Trade J. 135, no. 20: 435-6, 438 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 356.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. E.B.

VISCOSITY

ANON. Constant recording adhesive viscosimeter. Fibre Containers 37, no. 10: 72-4 (October, 1952).

With reference to the article by Killinger (*cf.* B.I.P.C. 22: 730), who suggested a constant recording viscometer for controlling the viscosity variations in corrugating starch, the construction and mode of operation of the Norcross viscometer for recording or recording and controlling viscosity in industrial processes are described. The possibilities of a hookup of this viscometer with means for starting agitation in corrugating starch for the reduction of its viscosity, or for adding higher-viscosity solutions for increasing it are discussed. Although primarily designed for the textile industry, Norcross viscometers are now also applied in the paper and paperboard and several related industries. 3 figures. E.S.

WASTE

JOGLEKAR, M. A., and NANDA, P. K. Utilization of wastes in pulp and paper industry. Indian Pulp and Paper 7, no. 2: 135-8 (August, 1952).

A general review of industrial wastes in the pulp and paper industry and of possible means for their utilization is given. 1 table and 1 figure. E.S.

WASTE PAPER

BENEDETTO, J. A., and GRAHAM, ROBERT A. Waste paper, its collection and usage. Paper Trade J. 135, no. 20: 276-8 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 table. E.B.

WEAVER, EARLE. Waste paper in relation to the paper industry. Paper Trade J. 135, no. 21: 30-1 (Nov. 21, 1952); *cf.* B.I.P.C. 23: 55.

The war years proved that one third of the raw-material needs of the paper industry can be supplied by the waste-paper industry. The continued expansion of uses for "secondary pulp" and a stable supply, demand, and price situation are of mutual interest and benefit to the waste-paper and the paper and board industries. L.C.

WHITE, PAUL. Facts concerning the waste paper industry and its relationship to pulp in the paper and paperboard industries. Paper Trade J. 135, no. 20: 279-81 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. E.B.

WAXES

LUX, HUBERT. Waxes for packaging purposes. Verpackungs Rundschau no. 6: 225-6 (June, 1952). [In German]

The properties and suitability of paraffins and plant and animal waxes for impregnating and laminating in the packaging industry are discussed briefly. E.S.

WHITE WATER

RUDOLFS, WILLEM, and AMBERG, HERMAN R. White water treatment. III. Factors affecting digestion efficiency. Sewage Ind. Wastes 24, no. 11: 1402-9 (November, 1952); *cf.* B.I.P.C. 23: 209.

Different methods for alleviating the effects of soluble sulfide upon the methane fermentation were investigated, because sulfides in relatively low concentrations retard the gasification process. Digestion studies conducted with concentrated white water to eliminate the sulfides formed showed that the addition of ferric chloride in concentrations up to 100 p.p.m., as Fe^{+++}, was ineffective in improving the process. A two-stage digestion, consisting of sulfate reduction and acid production in the first stage followed by a secondary unit for methane fermentation, was ineffective because of low sulfide reductions in the primary unit and subsequent sulfide accumulation in the secondary unit. A combination of sulfide removal by aeration with carbon dioxide and nitrogen gas and yeast-extract additions resulted in a twofold increase in the loading. However, at optimum digestion conditions, only approximately 68% of the B.O.D. could be reduced at an applied B.O.D. load of 0.09 lb./cu. ft. of capacity/day, and the digestion process remained still unwieldy from a practical standpoint. 3 tables, 6 figures, and 3 references. E.S.

WINDOWS

ARESIN. Windows in paper mills. Wochbl. Papierfabr. 80, no. 19: 707-8 (Oct. 15, 1952). [In German]

The advantages of windowless paper mills are discussed, particularly the better control of air conditioning and ventilation. This applies principally to the paper-machine room; the rest of the buildings may require different treatment as far as windows are concerned. E.S.

WOOD—EXTRACTIVES

ERDTMAN, H. Chemistry of some heartwood constituents of conifers and their physiological and taxonomic significance. Progress in Organic Chemistry 1: 22-63 (1952).

A review of heartwood components extracted from conifers is presented (*cf.* also Wise and Jahn, *ed.* Wood chemistry, 2d ed., v. 1:661-88 [1952]). 164 references. E.S.

ERDTMAN, HOLGER, and MISIORNY, ALFONS. Constituents of pine heartwood. XXXI. The content of pinosylvin phenols in Swedish pines. Svensk Papperstidn. 55, no. 16½: 605-8 (Kongressnummer, Sept. 4, 1952). [In English]

The spectrophotometric method described in Part XXX (*cf.* abstract below) has been employed for the analysis of the pinosylvin phenols in pine heartwood collected in various Swedish locations. The method is much more accurate than that described in Part XXVII (*cf.* B.I.P.C. 21: 738) which has been found to give low values if the phenol content exceeds 1%. Pines grown under conditions as identical as possible and in close vicinity of each other show great differences in phenol content; this indicates that genetic factors may play an essential role in the production of pinosylvin phenols. Contrary to previous experience, the ratio pinosylvin: pinosylvin monomethyl ether is subject to large variations. The relative pinosylvin content is higher in the peripheral (younger) portion of the heartwood than in the central (older) region. The total amount of pinosylvin phenols is generally

less in the central portion than in the periphery and, as the monomethyl ether is less toxic and condenses less rapidly with lignin than pinosylvin itself, this explains why pine heartwood is attacked by fungi preferentially in the central part, and why wood from young pines with little heartwood is more easily digested by the standard sulfite process than wood from more mature trees. The branches and root heartwood are particularly rich in pinosylvin phenols (about 2-5%). 4 tables, 1 figure, and 9 references. E.S.

LINDSTEDT, GÖSTA, and MISIORNY, ALFONS. Constituents of pine heartwood. XXX. A method for the quantitative estimation of pinosylvin phenols in pine heartwood. Svensk Papperstidn. 55, no. 16½: 602-4 (Kongressnummer, Sept. 4, 1952). [In English] *cf.* B.I.P.C. 23: 134.

A method for the quantitative determination of pinosylvin and its monomethyl ether in the heartwood of *Pinus sylvestris* L. has been developed. It is based upon the separation of the phenols by paper chromatography and spectrophotometric determination after extraction from the paper. Only small quantities of wood are required. 1 table, 1 figure, and 8 references. E.S.

WOOD—SACCHARIFICATION

DESFORGES, J. Hydrolysis of wood by the process of A. Héreng. Chimie et industrie 68, no. 4: 537-8 (October, 1952). [In French] *cf.* B.I.P.C. 22: 864.

In a polemic with regard to the low price of alcohol claimed for the Héreng process, contributions by Ch. Mariller, the president of the French association of alcohol distillers, and A. Héreng are quoted. E.S.

DUNN, PAUL M. Wood-sugar molasses as a carbohydrate supplement in the diet of livestock and poultry. J. Forest Products Research Soc. 2, no. 2: 70-2 (June, 1952).

The author outlines the feeding tests carried out by the Oregon State Agricultural Experiment Station on a variety of cattle and poultry using molasses obtained from Douglas-fir. He claims that the more complete utilization of products from wood residues in the ration of livestock would enhance the economy of the Oregon region. R.G.K.

HARRIS, ELWIN E. Production of livestock feed from waste wood. J. Forest Products Research Soc. 1, no. 1: 43-8 (September, 1951).

The author discusses the need for additional sources of carbohydrate food for humans and animals. He points out that, if waste wood in forests and wood-using industries were used efficiently, it could be converted to carbohydrates to meet the demand; he also describes the process of production and possible yield. 1 reference. R.G.K.

WOOD—STRUCTURE

HYLAND, FAY. The structure of wood. Paper Trade J. 135, no. 20: 85-94 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 357.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. It is identical with the previous reference. 11 figures. E.B.

WOOD ROOM

ARNOLD, HAROLD J. Preparation of wood. Paper Trade J. 135, no. 20: 110-12 (Nov. 14, 1952).

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 table and 1 figure. E.B.

LEWIS, JOHN. The wood room. Paper Trade J. 135, no. 20: 112-20 (Nov. 14, 1952); *cf.* B.I.P.C. 21: 357.

This is one of a second series of industrial lectures on pulp and paper manufacture presented at the University of Maine. 1 flowsheet and 14 figures. E.B.

WOOD STORING

RENNERFELT, E. Problems of storage decay in pulpwood. Svensk Papperstidn. 55, no. 16½: 609-12 (Kongressnummer, Sept. 4, 1952). [In Swedish]

The most common fungus causing storage decay in Swedish woodyards is *Stereum sanguinolentum;* another frequent type is *Polyporus abietinus.* Both attack the lignin first and the cellulose only after a certain period. Another group (including *Lentinus lepideus, Lenzites sepiaria,* and *Trametes serialis*) attacks both the cellulose and the lignin simultaneously but usually only after a longer storage period. An optimum moisture content is essential for the growth of these organisms, and its prevention may be accomplished by either saturating the logs above this optimum or drying them below it. Both methods are difficult to apply consistently to the wood from the time of felling to the storage in woodyards. Directions for the correct treatment of barked and unbarked logs during the different logging seasons, transportation, and piling on land or under-water storage in ponds are given. Storage decay involves a loss in wood substance; affected wood after a storage period of two years was found to give a 10% lower yield than sound wood. In addition, strength properties and color of the resulting products deteriorate. Hence, every effort should be made to keep these losses as low as possible. 2 tables, 8 figures, and 3 references. E.S.

WOOD TRANSPORTATION

LIMING, G. E. Bundling pulpwood in western Washington. J. Forest Products Research Soc. 2, no. 3: 48-9 (September, 1952).

The problem of bundling small logs and pulpwood to facilitate handling and reducing log loss in water transportation and storage is briefly outlined. R.G.K.

WILLIAMS, CLARENCE O. Plow for distributing wood to grinder block pins. Pulp Paper Mag. Can. 53, no. 11: 132 (October, 1952).

A plow is used to distribute wood evenly to both sides of a rubber-belt conveyor at any point along the conveyor; it cannot be jammed by small wood pieces or sticks as all former types, because it can be lifted, allow the small pieces to pass, and then be dropped back into place. 5 figures. E.S.

WOOD WASTE

BORCHGREVINK, AXEL. An automatic stoker for sawdust. Norsk Skogind. 6, no. 10: 311-12 (October, 1952). [In Norwegian].

The installation at a Norwegian sawmill in Skien is described. 4 figures. E.S.

Patent Section

Although the abstracts of the United States and Canadian patents are prepared from the patents themselves, the initial selection of the patents to be abstracted is made from the Patent Gazette *and the* Canadian Patent Office Record *and, therefore, it is possible that the patent section will not contain all patents of potential interest to the industry. In so far as possible, an attempt will be made to indicate patents issued in both countries.*

The patent abstracts are listed under the various headings currently used for the abstracts of periodical articles.

Printed copies of United States patents can be obtained from the Commissioner of Patents, Washington, D.C.; the price is 25 cents per copy. Canadian patents up to and including December, 1948, are available only as manuscripts or photostatic copies, and an estimate of the cost of a patent should be obtained from the Commissioner of Patents, Ottawa, Canada, in advance of the order. With January, 1949, printed copies of Canadian patents are available at 25 cents per copy of less than 50 sheets of printed matter. For patents of 50 sheets, or over, the price is $1.00 per copy. Beginning with volume 21, the Canadian patents will be abstracted from the complete specifications.

BARKERS AND BARKING

HILLBOM, TOR O. Barking machine. Canadian patent 487,523. Filed March 21, 1949. Issued Oct. 28, 1952. 1 claim.

In a barking machine in which the logs are piled upon each other in a container and brought into movement at right angles to their longitudinal direction, provision is made for an inclined bottom structure consisting of a plurality of helically threaded rollers extending longitudinally and in parallel relationship between the two end walls; there are two groups of rollers arranged one on each side of the midplane of the container; the rollers of each group rotate in the same direction and rollers of different groups rotate in opposite directions. 2 figures. C.J.W.

HORSTKOTTE, FREDERICK W. Oscillating manifold hydraulic log barker. U. S. patent 2,615,481. Filed Nov. 10, 1950. Issued Oct. 28, 1952. 8 claims. [Cl. 144-208]

In an oscillating manifold hydraulic log barker, means are provided to improve the surface coverage by co-ordinating the forward speed of the log with the frequency of oscillation of the nozzle streams over its surface. The water is supplied under a pressure of 1300 to 1500 p.s.i. 5 figures. C.J.W.

MERTZ, FRED A., and WALKER, ROBERT S. Barking drum. Canadian patent 487,843. Filed Nov. 24, 1950. Issued Nov. 4, 1952. 4 claims. Assigned to Traylor Engineering & Manufacturing Company.

A barking drum, comprising a continuous cylindrical shell, is provided with milled bark removal ports, each port being reinforced by a bar affixed externally in the shell and enclosing the port but suitably spaced therefrom. The barking drum has lifting members which also serve as reinforcement for the shell and its ports. 3 figures. C.J.W.

PIISPANEN, VAINO. Log debarking device. Canadian patent 487,732. Filed June 12, 1948. Issued Nov. 4, 1952. 9 claims.

The barking elements are ropes, wires, or stranded cables; one end is secured to the head by an eye-bolt and the opposite end is secured to the stem of a piston which is actuated by pressure fluid; this arrangement permits firm contact of the debarking element with all surfaces of the log. Provision is made for the periodic disengagement of the elements from the log to permit the removal of any bark particles which might tend to interfere with their cutting action. 6 figures. C.J.W.

BOARD, INSULATING

BERNER, ERLING. Sound-absorbing board with holes containing debris material. U. S. patent 2,615,525. Filed July 29, 1947. Issued Oct. 28, 1952. 4 claims. [Cl. 181-33]

A method is proposed for making the holes in sound-absorbing boards with the aid of rotating core borers operating at about 1000 r.p.m. It is proposed that a portion of the material loosened by the borers remain at the bottom of the holes. 3 figures. C.J.W.

BOARD, LAMINATED

WEYMOUTH, LAWRENCE B. Laminated panel. U. S. patent 2,616,823. Filed Jan. 30, 1948. Issued Nov. 4, 1952. 14 claims. Assigned to Briggs Manufacturing Company. [Cl. 154-106]

A panel for the interior trim of automobile bodies consists of a foundation board, a layer of padding, and a covering layer of cloth or other suitable material; the several layers are bonded together under pressure through the medium of resin contained in a low-density, relatively thick paper or pulp sheet interposed between the foundation board and the padding. 4 figures. C.J.W.

BOARD DRYING

AVERY, DAVID, and AVERY, JOHN. Drying fibrous or like material. Canadian patent 487,132. Filed April 16, 1948. Issued Oct. 14, 1952. 6 claims.

The formed board, containing an electrolyte, is placed in a hydraulic press and sheet electrodes of brass or copper are placed above and below the board; an alternating current of suitable voltage is applied to the electrodes. To facilitate the escape of water and steam, sheets of wire gauze are placed on each side of the board (canvas or other sheets may be used). The operation is continued until the board is dry. In practice, a number of boards can be treated simultaneously. 1 figure. C.J.W.

BOARD SPECIALTIES

ADDISON, JOHN S. Shipping package and pallet means. Canadian patent 487,741. Filed March 31, 1950. Issued Nov. 4, 1952. 5 claims. Assigned to Addison-Semmes Corporation.

A pallet for the shipment of furniture and adapted for use with a fork lift truck is provided with tubular supporting members adapted to receive the legs or like projections of the article mounted thereon; these members guard the legs against injury and restrain the movement of the article on the pallet platform. 4 figures. C.J.W.

ARNESON, EDWIN L. Bottle carrier. U. S. patent 2,616,611. Filed Sept. 23, 1949. Issued Nov. 4, 1952. 9 claims. Assigned to Morris Paper Mills. [Cl. 229-28]

A bottle carrier is characterized by side walls, a central upright partition and suspending panel disposed medially of said walls, and a plurality of cross partitions which are cut from the material of and hingedly connected with the panel and side walls. Provision is made to brace and rigidify the container as a whole by the end-wall structure. 6 figures. C.J.W.

BUTTERY, KENNETH T. Collapsible lined tray or carton. U. S. patent 2,617,579. Filed Feb. 14, 1949. Issued Nov. 11, 1952. 5 claims. Assigned to Sutherland Paper Company. [Cl. 229-35]

The body or wall portion is formed of an integral blank and the liner is formed of a sheet superimposed thereon and associated therewith in a manner to permit the carton to be erected quickly and the liner providing a complete unbroken liner for the interior. The container can be shipped in the knockdown condition. 7 figures. C.J.W.

DARR, HAROLD W. Carton. U. S. patent 2,613,867. Filed Aug. 3, 1949. Issued Oct. 14, 1952. 2 claims. Assigned 27.5% to M. Josephine Darr, 22.5% to Howard F. Woo, and 22.5% to Lolita Y. Woo. [Cl. 229-37]

A handle for a folding box is formed in the blank from which the carton is formed; the handle lies within the plane of the carton top when not in use but can be opened readily to operative position. 5 figures. C.J.W.

KUCHEL, JOSEPH C. Bottle carrier. U. S. patent 2,615,749. Filed July 25, 1950. Issued Oct. 28, 1952. 5 claims. [Cl. 294-87]

The bottle-carrying cells are so formed that bottles may be picked up and dropped through the lower end of the carrier. The bottles are frictionally held in the cells. 9 figures. C.J.W.

MIRES, JOSEPH E. Bottle cartons. Canadian patent 487,486. Filed Nov. 25, 1950. Issued Oct. 21, 1952. 3 claims. Assigned to Somerville Limited.

A divided carton for bottles is formed from a single cardboard blank which is cut and folded so that it can be twisted from a semiassembled position to a position in which the dividing partitions are located in operative position with one simple movement. 3 figures. C.J.W.

O'SULLIVAN, WILLIAM L. Bottle carrier. U. S. patent 2,615,750. Filed Sept. 3, 1948. Issued Oct. 28, 1952. 1 claim. [Cl. 294-87.28]

A cardboard bottle carrier is so designed that it can be slipped over bottles in their normal position in the case. 9 figures. C.J.W.

CALCIUM CARBONATE

MCALLISTER, ROBERT W. Process of making calcium carbonate. U. S. patent 2,617,711. Filed April 30, 1949. Issued Nov. 11, 1952. 11 claims. [Cl. 23-66]

The method consists in reacting limekiln exhaust gases containing lime dust, limestone dust, and carbon dioxide with fine particles of water; the first step is the formation of calcium hydroxide which then reacts with the carbon dioxide to yield the carbonate. The limekiln gases may be fortified with calcium hydroxide. 2 figures. C.J.W.

CELLULOSE—CRYSTALLINITY

WARD, KYLE, JR., CONRAD, CARL M., and SEGAL, LEON. Reducing the crystallinity of native fibrous cellulosic material. U. S. patent 2,580,491. Filed Aug. 8, 1950. Issued Jan. 1, 1952. 10 claims. Assigned to the United States of America as represented by the Secretary of Agriculture. [Cl. 260-212]

The degree of crystallinity of cotton is reduced by treatment with methylamine or ethylamine for 4 to 16 hours; hexylamine may be added to the lower amine if crystallinities above 50% are desired. The excess amine can be removed by extraction with chloroform. C.J.W.

CELLULOSE ETHERS

BERGMAN, WILLIAM E. Purification of carboxymethyl cellulose by ion exchange resins. U. S. patent 2,617,800. Filed June 10, 1949. Issued Nov. 11, 1952. 4 claims. Assigned to Phillips Petroleum Company. [Cl. 260-232]

A method is described for converting a water-soluble salt of carboxymethylcellulose into water-soluble carboxymethylcellulose by the use of Amberlite resins. C.J.W.

CHLORINE DIOXIDE

MARKS, HENRY C., and JOINER, ROBERT R. Manufacture of chlorine dioxide. U. S. patent 2,616,792. Filed April 1, 1949. Issued Nov. 4, 1952. 8 claims. Assigned to Novadel-Agene Corporation. [Cl. 23-152]

The manufacture of chlorine dioxide by the passage of dilute nitrogen peroxide (about 5%) into an aqueous chlorate solution is claimed. 1 figure. C.J.W.

COMBINATION PACKAGES

TARDIFF, RAY O. Combination package. U. S. patent 2,617,577. Filed Nov. 22, 1949. Issued Nov. 11, 1952. 1 claim. Assigned to Breyer Ice Cream Company. [Cl. 229-15]

The package consists of a conventional paper carton member and a tray member to be inserted within the carton. It is designed for cup cakes, ice-cream tarts, and the like. 5 figures. C.J.W.

COOKING PROCESS

HOLGERSSON, SIGBJÖRN P. H. E., RUDBERG, MAC S., and RYDBERG, DAVID R. Apparatus for sampling pulp. U. S. patent 2,615,339. Filed Nov. 2, 1948. Issued Oct. 28, 1952. 1 claim. [Cl. 73-423]

A sampling tube is designed to be inserted into a digester wall for the withdrawal of pulp samples at different distances from the wall. It should be long enough to extend to or beyond the center of the digester. By this sampling method it is possible to determine the rate of decomposition of the pulp and stop the cooking at the critical time. This is identical with Canadian patent 482,539 (April 15, 1952); *cf.* B.I.P.C. 22: 785. 3 figures. C.J.W.

DISPENSING CONTAINERS

SMITH, SHARRELL E. Popcorn box with pouring spout. U. S. patent 2,617,581. Filed May 26, 1947. Issued Nov. 11, 1952. 1 claim. [Cl. 229-39]

The box has end flaps for fastening the bottom end of the box, different flaps at the top of the box for fastening the major portion of the top, and still other flaps which form a pouring spout. 4 figures. C.J.W.

TOMARIN, HARRY A. Dispensing container. U. S. patent 2,616,610. Filed April 1, 1947. Issued Nov. 4, 1952. 4 claims. Assigned 50% to J. Warren Kinney, Jr. [Cl. 229-17]

A one-piece container has formed integrally therewith an inclined dispensing panel which spans the adjacent portions of the top and front panels; the sides of the dispensing panel terminate in a pair of outwardly projecting abutment members which preclude blocking of the perforations in the discharge panel. 3 figures. C.J.W.

WHITE, ARTHUR J. Container with reclosure and shield device. U. S. patent 2,615,610. Filed Dec. 26, 1947. Issued Oct. 28, 1952. 5 claims. Assigned to American Can Company. [Cl. 229-7]

In a can with a metal end, provision is made so that the raw edge left by pressing inwardly a scored portion of the cover to provide a dispensing opening is shielded to protect the user against injury. 7 figures. C.J.W.

FOLDING BOXES

BUTTERY, KENNETH T. Automatic set-up box. Canadian patent 487,673. Filed Sept. 1, 1950. Issued Oct. 28, 1952. 7 claims. Assigned to Sutherland Paper Company.

A collapsible carton of the automatic erecting type has bottom parts which are interlocked and capable of supporting a substantial load when in the erected position. The carton is automatically erected by pressure on opposite ends of the collapsed carton. 9 figures. C.J.W.

FISCHER, HOWARD J. Carton construction. U. S. patent 2,617,578. Filed Dec. 9, 1949. Issued Nov. 11, 1952. 5 claims. Assigned to The United States Printing & Lithograph Company. [Cl. 229-16]

The invention relates to a preformed blank for folding into a container for displaying crayons or the like; the container is provided with a false bottom for holding each row of crayons at a higher level than the row in front. 3 figures. C.J.W.

MELLER, REGINALD B. Self-locking folding box. U. S. patent 2,617,580. Filed Nov. 10, 1948. Issued Nov. 11, 1952. 13 claims. Assigned to Bemiss-Jason Company. [Cl. 229-36]

The invention provides for the formation, without the use of adhesives, of a rigid and smooth box corner free from projections. The interlock resists forces acting against the walls of the box from both inside and outside. It is also free from play or lost motion. 8 figures. C.J.W.

VINES, OSCAR L. Carrier for columnar articles. U. S. patent 2,615,612. Filed June 21, 1951. Issued Oct. 28, 1952. 7 claims. [Cl. 229-28]

A blank is described in which the carrier walls and partitions are of double thickness and in which the strength is augmented by an intermediate glue layer. The handle comprises a vertical extension of the central partition of the carrier. 9 figures. C.J.W.

MACHINERY—CALENDERS

GRIMM, RICHARD J. Method of making coated paper moisture resistant. U. S. patent 2,617,743. Filed March 8, 1952. Issued Nov. 11, 1952. 3 claims. Assigned to St. Regis Paper Company. [Cl. 117-64]

In the calendering of a dried paper web which has been coated with a mixture of clay and casein, soya protein, and the like, the paper is treated with formaldehyde by incorporating it in the so-called steam showers customarily used for applying steam to the paper on supercalenders. In the preferred method, an aqueous solution (10 to 40%) of formaldehyde is allowed to drip into the hot interior of the steam shower enclosure so that formaldehyde gas is entrained in the streams of steam which are projected through small exhaust apertures onto the paper just as it passes between the rolls of the calender. The paper has a moisture-resistant, hardened, glossy, print-receptive surface suitable for high-speed lithographic printing. 3 figures. C.J.W.

MACHINERY—CONVERTING MACHINERY

AHLMEYER, HEINZ, and SHERMAN, WHITNEY D. Carton folding apparatus and method. U. S. patent 2,616,341. Filed Sept. 30, 1947. Issued Nov. 4, 1952. 15 claims. Assigned to Robert Gair Company, Inc. [Cl. 93-37]

An apparatus is described for folding cartons of the bottle-carrier type designed to carry four, six, or more bottles. These are formed from a single sheet of material. 17 figures. C.J.W.

BERGSTEIN, SAMUEL. Apparatus for assembling multiple part egg containers and the like. U. S. patent 2,615,378. Filed Nov. 14, 1950. Issued Oct. 28, 1952. 5 claims. [Cl. 93-37]

The machinery is described for assembling an egg container which comprises an outer band member and an inner partitioning element of double thickness which are adhesively secured together. 8 figures. C.J.W.

ROWE, WILLIAM W., SPANGLER, CARROLL L., and FRICK, ROY C. Apparatus for separating conjointly gathered bag tube walls. U. S. patent 2,615,375. Filed Aug. 24, 1948. Issued Oct. 28, 1952. 5 claims. Assigned to Cincinnati Industries, Inc. [Cl. 93-8]

The purpose of the invention is to separate the walls of a bag tube in a continuous length and by continuously acting means. After the bag tube has passed through the first set of pinch rolls, it is inflated with air or other gas; this body of gas remains in one place while the bag tube travels and continuously acts to effect a separation of the walls of the traveling tube. An apparatus for this purpose is described. 16 figures. C.J.W.

WILLIAMS, VICTOR G. Machinery for fabricating bags in various sizes. Canadian patent 487,767. Filed Dec. 30, 1948. Issued Nov. 4, 1952. 4 claims. Assigned to Delamere & Williams Company, Limited.

The basic purpose of the invention is to provide a machine with simple adjustable means to enable it to make bags in a relatively large variety of sizes. The machine has a regulable mechanism for controlling the action of the transverse sealing element to permit the passage of a predetermined length of bag material before operating thereon and to operate thereon at a proper speed. The bags are designed for tea, coffee, or the like. 10 figures. C.J.W.

WILLIAMSON, OSCAR H. Box assembly rack. U. S. patent 2,618,208. Filed May 26, 1951. Issued Nov. 18, 1952. 4 claims. Assigned to International Paper Company. [Cl. 93-39.1]

An assembly rack for boxes includes three sets of deflector or folding shoes to effect the folding of the box section cap and a supporting cage that effects the assembly of the box section by placing the component parts in the rack in proper sequence—cap, inner end pad, outer shorter telescoping sleeve, and inner longer telescoping sleeve. 7 figures. C.J.W.

MACHINERY—CUTTERS

HORNBOSTEL, LLOYD. Sheet cutter. U. S. patent 2,615,518. Filed May 1, 1947. Issued Oct. 28, 1952. 4 claims. Assigned to Beloit Iron Works. [Cl. 164-68]

This corresponds to Canadian patent 475,642 (July 31, 1951); *cf.* B.I.P.C. 22: 72. 8 figures. C.J.W.

MACHINERY—DRYERS

CRAM, HERVEY G. Siphon for driers. U. S. patent 2,617,205. Filed Sept. 13, 1950. Issued Nov. 11, 1952. 10 claims. [Cl. 34-124]

The patent refers to a syphon arrangement for removing condensate from a steam-heated cylinder; means are provided for the positive alignment of the steam-joint body with the clamping ring carried by the cylinder trunnion and with the pivotal slip ring disposed between the body and the trunnion. The inside syphon leg can be radially aligned with an operating hand lever for indicating the position of the inside leg in the cylinder and the relation to the outside leg. 7 figures. C.J.W.

HORNBOSTEL, LLOYD. Drier section for paper machine. Canadian patent 487,197. Filed Nov. 6, 1948. Issued Oct. 14, 1952. 10 claims. Assigned to Beloit Iron Works.

This corresponds to U. S. patent 2,578,552 (Dec. 11, 1951); *cf.* B.I.P.C. 22: 374. It relates to a flexible expansion joint which facilitates the removal of individual drier drums without the disturbance of adjacent equipment. 8 figures. C.J.W.

MACHINERY—HEAD BOX

HORNBOSTEL, LLOYD, and BEACHLER, EDWARD D. Stock inlet. Canadian patent 487,198. Filed Aug. 15, 1949. Issued Oct. 14, 1952. 11 claims. Assigned to Beloit Iron Works.

A rectifier roll or a stack of superimposed rolls extends transversely across the interior of the stock inlet to replace the baffle arrangements heretofore employed, and a second rectifier roll or group of rolls is disposed adjacent the outlet of the headbox opening to control the flow of stock through the opening onto the forming wire. The number and size of the rolls are determined by the desired velocity of the stock flow. 3 figures. C.J.W.

STAEGE, STEPHEN A. Paper machinery. U. S. patent 2,619,011. Filed July 23, 1947. Issued Nov. 25, 1952. 5 claims. The Black-Clawson Company. [Cl. 92-44]

A stock inlet is described which is capable of delivering the stock to the forming member of a paper machine under controlled conditions of substantially uniform velocity across the width of the machine while minimizing flocculation and the development of eddy currents and other nonuniform flow conditions tending to interfere with the desired uniformity of fiber distribution in the stock as delivered to the forming member. The construction is described. 3 figures. C.J.W.

MACHINERY—PASTING MACHINE

FARRELL, ROBERT A., MUELLER, WILLIAM G., and BARTES, AUGUST, JR. Apparatus for making sealed packages. U. S. patent 2,615,377. Filed May 10, 1949. Issued Oct. 28, 1952. 11 claims. Assigned to Marathon Corporation. [Cl. 93-36.01]

The patent covers an apparatus for inserting and sealing flexible membranes in the end of rectangular paper cartons and the like. Provision is made for the heat sealing of the membrane to the inner walls of the carton. 40 figures. C.J.W.

MACHINERY—PULPERS

KOLB, WILLIAM K., and POLLOCK, SAMUEL W. Pulper for paper stock. U. S. patent 2,617,334. Filed April 19, 1947. Issued Nov. 11, 1952. 2 claims. Assigned to Valley Iron Works Company. [Cl. 92-26]

The pulper, in which the circulation of the stock is positively controlled during the pulping operation, consists of a large tank supported on a frame, rotor means for circulating and breaking up the stock, baffles, and feed-screw means for controlling the recirculation of the stock so as to insure numerous contacts of undisintegrated pulp with the rotor. 5 figures. C.J.W.

MACHINERY—SHEET STACKERS

MORRISON, HUGH S. Sheet conveying, stacking and delivering apparatus. Canadian patent 487,240. Filed April 14, 1951. Issued Oct. 14, 1952. 12 claims. Assigned to The Fairfield Paper and Container Co.

A method is described for the stacking of corrugated paperboard sheets so that the stack will have a definite number of sheets or a definite height. The feed of the sheets from a continuously driven feed conveyor onto a second intermittently movable conveyor is controlled by a suitable gate associated with the first conveyor which can be actuated to interrupt the feed of the sheets. The control mechanism for the gate makes it possible to handle and stack sheets of different lengths. 11 figures. C.J.W.

MACHINERY—SLITTERS AND WINDERS

CARTER, THOMAS N. Winding machine. U. S. patent 2,617,608. Filed Dec. 23, 1949. Issued Nov. 11, 1952. 7 claims. Assigned to Cameron Machine Company. [Cl. 242-66]

A mechanism is provided so that the roll of material being wound on the winding shaft will be constrained within the valley between the winding rollers as the winding operation proceeds and the diameter of the roll being wound increases. 3 figures. C.J.W.

CARTER, THOMAS N., and FRASCELLA, ALEXANDER D. Winding machine. U. S. patent 2,617,607. Filed Dec. 23, 1949. Issued Nov. 11, 1952. 6 claims. Assigned to Cameron Machine Company. [Cl. 242-66]

A mechanism is provided which relieves the operator of the necessity of manually elevating the riding roller between winding operations and of responsibility for the careful lowering of the riding roller to eliminate damage and accidents from a falling riding roller. 7 figures. C.J.W.

MACHINERY—SORTING MACHINE

MOORE, LAWRENCE A. Automatic sheet throwout apparatus. U. S. patent 2,617,528. Filed July 29, 1946. Issued Nov. 11, 1952. 20 claims. Assigned to American Coating Mills Corporation. [Cl. 209-111]

Means are provided for detecting the presence of a defect in a strip of paper before it is cut into sheets and to discard automatically the sheet containing the defect; light sensitive means are employed to detect the defect. The sheet containing a defect is directed to a throwout table, whereas a sheet containing no defect is delivered to a layboy. 12 figures. C.J.W.

MACHINERY—STRIPPING MACHINE

PELIKAN, ALEXANDER. Device for automatically removing window cutouts from blanks. U. S. patent 2,615,376. Filed June 9, 1949. Issued Oct. 28, 1952. 2 claims. Assigned to Federal Carton Corporation. [Cl. 93-36]

An apparatus is described for automatically stripping the cutout areas of blanked sheets as they are individually and successively fed from the die-cutting means in a continuous operation. The device can be attached to standard types of machines for cutting and scoring sheets. 4 figures. C.J.W.

MACHINERY—SUCTION BOXES

VAN RYZIN, JOSEPH P. Suction box cover. U. S. patent 2,618,206. Filed Oct. 3, 1949. Issued Nov. 18, 1952. 3 claims. Assigned to Appleton Wood Products Co. [Cl. 92-51]

This corresponds to Canadian patent 477,588 (Oct. 9, 1951); cf. B.I.P.C. *22*: 222. The suction box cover is constructed of cross members and interfitting vertical wooden blocks. 9 figures. C.J.W.

MACHINERY—SUCTION ROLLS

HEYS, RALPH C. Papermaking machine. U. S. patent 2,618,205. Filed March 8, 1948. Issued Nov. 18, 1952. 2 claims. Assigned to Beloit Iron Works. [Cl. 92-49]

This corresponds to Canadian patent 474,550 (June 19, 1951); *cf.* B.I.P.C. 21: 894. It relates to a suction roll operating with at least two press rolls. 6 figures. C.J.W.

HORNBOSTEL, LLOYD. Combined fluid pressure and suction press. Canadian patent 487,201. Filed Feb. 11, 1950. Issued Oct. 14, 1952. 10 claims. Assigned to Beloit Iron Works.

In a combined fluid pressure and suction press, the fluid pressure area is confined to the nip of the press and lies within the suction area. The fluid under pressure (e.g., air or other gas) acts directly against the suction area of the press. The suction roll of the press is provided with a resilient cover or peripheral coating so that an effective fluid seal is formed at the press nip by deformation of the suction roll. 3 figures. C.J.W.

HORNBOSTEL, LLOYD. Paper machine suction press. Canadian patent 487,199. Filed Feb. 11, 1950. Issued Oct. 14, 1952. 4 claims. Assigned to Beloit Iron Works.

The invention covers a reverse suction press having a vertical nip accommodating free drainage of moisture ahead of the nip and clean transfer by the utilization of gravitational forces acting upon the web beyond the nip to strip the web from the reversed press felt. The web is transferred from a first press felt to a second press felt by means of suction developed at the reversed suction press but without subjecting the web to nip pressure as it is transferred. 2 figures. C.J.W.

MACHINERY—WEB-FEEDING MECHANISM

BAUMGARTNER, JOHN R. Web feeding mechanism for carton blank forming machines. U. S. patent 2,616,689. Filed Oct. 17, 1949. Issued Nov. 4, 1952. 3 claims. [Cl. 271-2.4]

The general object of the invention is to provide a machine in which a web of paper from a supply roll is intermittently fed into and out of a creasing and cutting or blank-forming press from a pair of intermittently active feed rolls to which the paper is fed by continuously active metering feed-roll means for creating a loop in the paper web between the set of rolls during the cutting operation of the press. 8 figures. C.J.W.

MACHINERY—WIRES

HORNBOSTEL, LLOYD. Water removal device for paper forming wire. Canadian patent 487,200. Filed Feb. 11, 1950. Issued Oct. 14, 1952. 15 claims. Assigned to Beloit Iron Works.

A water-removal device for a paper-forming wire includes an impermeable belt contacting the under surface of the wire for a portion of its run, which is then separated therefrom along a downwardly inclined path to form a reduced pressure area directly underlying the wire to aid the drainage of the moisture. 4 figures. C.J.W.

MOLDED PULP ARTICLES

BRENNAN, JOSEPH B. Method of making loud-speaker diaphragms. U. S. patent 2,619,012. Filed Aug. 5, 1947. Issued Nov. 25, 1952. 2 claims. [Cl. 92-54]

Loud-speaker diaphragms are formed by depositing fibrous material which is pressed to compress the fibers and to shape the blank. Preferably, the fibers are deposited on a porous mold plate which is subjected to a vacuum on its lower side; a plunger member may be employed to produce superatmospheric pressure in the fiber suspension and to compress the deposited fibers. 3 figures. C.J.W.

PACKAGING

CANDEE, ELLSWORTH T. Packaging buffing compound and like materials. U. S. patent 2,617,521. Filed March 5, 1949. Issued Nov. 11, 1952. 1 claim. Assigned to The Lea Manufacturing Company. [Cl. 206-56]

A container for a buffing compound consists of cylindrical paperboard side walls lined with a layer of substantially nonporous, moisture-impermeable material with no tendency to adhere to the buffing compound; the lower end closure is of metal which reinforces the container against collapse. 4 figures. C.J.W.

DONNELL, JOHN S. Art of packaging. U. S. patent 2,618,110. Filed April 30, 1949. Issued Nov. 18, 1952. 2 claims. Assigned to Florida Fibre Box Company. [Cl. 53-16]

A container for cut flowers and a method of packaging are described. 10 figures. C.J.W.

PAPER—COATED

AZORLOSA, JULIAN L. Paper coating. U. S. patent 2,616,818. Filed Nov. 18, 1948. Issued Nov. 4, 1952. 3 claims. Assigned to Hercules Powder Company. [Cl. 117-155]

The coating agent consists of an aqueous dispersion of clay containing from 50 to 65% total solids and, as an adhesive, from 6 to 10% of polyacrylamide (based on the weight of the clay); this contains glyoxal to render the adhesive substantially insoluble in water. The polyacrylamide was prepared by refluxing 60 parts of acrylamide, 100 parts of isopropyl alcohol,* 0.88 part of 68% cumene hydroperoxide, and 540 parts of water (adjusted to pH 8.5 with sodium hydroxide) for two hours and concentrating at 20 mm. to give a solution containing 25% solids. A clay slip (100 parts) containing 72% solids was mixed with 9 parts of the polyacrylamide and the mixture made up to 62.4% solids; this mixture may be modified by the addition of 5% glyoxal and 2% potassium bicarbonate (based on the dry weight of the adhesive). A paper coated with this composition has excellent finish and gloss and a bright color. C.J.W.

TRIST, ARTHUR R. Machines for the coating of webs of material. Canadian patent 487,115. Filed Nov. 25, 1949. Issued Oct. 7, 1952. 8 claims. Assigned to Trist Holdings, Ltd.

This is equivalent to U. S. patent 2,593,074 (April 15, 1952); *cf.* B.I.P.C. 22: 714-15. The construction of the coating machine is described. 16 figures. C.J.W.

PAPER—SHEET FORMATION

HUEBNER, WILLIAM C. Method of making sheet or web material. U. S. patent 2,615,822. Filed Feb. 21, 1946. Issued Oct. 28, 1952. 7 claims. [Cl. 117-47]

A method is described for the formation of sheets or webs, which may consist of a single layer or a plurality of laminated layers of the same or different materials (the layers being of the same or different thickness), the material containing electrically chargeable substances (nature not stated); the material is deposited on a movable support by the lines of force of an electric field created at a predetermined location relative to the support. 8 figures. C.J.W.

PAPER SPECIALTIES

GUTTMAN, JOSEPH M. Mailing card. U. S. patent 2,616,612. Filed Sept. 7, 1951. Issued Nov. 4, 1952. 4 claims. [Cl. 229-92.8]

The mailing card has a detachable portion which can be used as a credit card. 6 figures. C.J.W.

UBER, JAY J. Battery separator. Canadian patent 487,775. Filed Feb. 26, 1947. Issued Nov. 4, 1952. 11 claims. Assigned to E. I. du Pont de Nemours and Company.

A liquid-permeable battery separator consists of a base paper sheet having an air permeability of 4 to 28 seconds (Gurley) and a thickness of 0.028 to 0.040 inch; the sheet is thoroughly impregnated with an A-stage phenol-formaldehyde resin and dried at 112 to 136°C. for 5 to 10 minutes; the separator is finally cured for two minutes at 170°. C.J.W.

PAPER SPLICING

WHATMORE, MARVIN C. Method of rewinding paper core waste. U. S. patent 2,617,606. Filed Feb. 27, 1952. Issued Nov. 11, 1952. 1 claim. [Cl. 242-58]

Unwound paper remaining on the core of a spent supply roll is spliced to the paper on a fresh supply roll while the rolls are in position on the reel. The method is applicable to a printing press. 2 figures. C.J.W.

PHYSICAL TESTING—PULP

WITHAM, GEORGE S. Paper stock analyzer. U. S. patent 2,615,329. Filed July 16, 1946. Issued Oct. 28, 1952. 3 claims. Assigned to The Bristol Company. [Cl. 73-63]

An apparatus is designed for the simultaneous determination of the consistency and freeness of flowing paper stock. 4 figures. C.J.W.

PLASTICS—PAPER-BASE

PORTER, PHILIP K. Synthetic resin and method of producing same. Canadian patent 487,212. Filed June 22, 1943. Issued Oct. 14, 1952. 6 claims. Assigned to Canadian Westinghouse Company, Limited.

The patent covers a method of combining fibrous materials with synthetic resins to produce composite mixtures suitable for molding under temperature and pressure. One example of forming a molding material consists of the

addition of 100 pounds of viscose (7.5% solids) to 1880 pounds of water, followed by 112.5 pounds of dry pulp; after beating for two hours, the mixture is slowly treated with 120 pounds of a 50% alcoholic solution of cresylic acid-formaldehyde resin in the A stage; sulfuric acid is then added until the pH is approximately 4. The product may be molded as desired. C.J.W.

SHIPPING CONTAINERS

BERGSTEIN, ROBERT M. Prelined container having multiple cells. U. S. patent 2,617,576. Filed Jan. 24, 1945. Issued Nov. 11, 1952. 6 claims. Assigned to Robert Morris Bergstein and Frank David Bergstein. [Cl. 229-14]

Prelined containers have two or more individual cells or compartments which can be employed for packaging different increments of the same contents or for contents of diverse characters or for materials designed for ultimate combination but which must be kept separate during shipment and storage. 21 figures. C.J.W.

DONNELL, JOHN S. Shipping container. U. S. patent 2,618,429. Filed Sept. 7, 1950. Issued Nov. 18, 1952. 6 claims. Assigned to Florida Fibre Box Company. [Cl. 229-45]

Shipping containers for fruit, vegetables, or other articles have a releasable locking arrangement for securing the cover. 7 figures. C.J.W.

HARRISON, JOHN K. M. Shock resistant container. U. S. patent 2,618,428. Filed Jan. 27, 1947. Issued Nov. 18, 1952. 2 claims. [Cl. 229-5.6]

The patent covers the end structure of a cylindrical container for liquids which has a marked resistance to mechanical shock. 3 figures. C.J.W.

MACKENZIE, JOHN D. Adhesive tape shipping and display container. Canadian patent 487,656. Filed March 20, 1951. Issued Oct. 28, 1952. 6 claims. Assigned to E. S. & A. Robinson (Canada) Limited.

The construction of a container for the shipment and display of dispensers for tapes is claimed. It has an inverted V-shaped tray which is supported at its outside edge on the bottom panel and along its center line above this panel. 3 figures. C.J.W.

PAUL, PHILIP F., and CAPPS, RONALD. Chick shipping container. U. S. patent 2,615,611. Filed April 19, 1949. Issued Oct. 28, 1952. 2 claims. Assigned to The Patent and Licensing Corporation. [Cl. 229-15]

In a shipping contained for baby chicks, the crossed partitions are so constructed as to prevent the possibility of the chicks having their toes pinched between the bottom edges of the partitions and the surface of the bottom member of the container. 4 figures. C.J.W.

REESER, HARRY C. Container with telescoping closure. U. S. patent 2,615,613. Filed March 25, 1949. Issued Oct. 28, 1952. 3

claims. Assigned to The Patent and Licensing Corporation. [Cl. 229-43]

In a container consisting of a body portion and a cover member which entirely or partially telescopes over the body portion, the construction is such that, in gripping the hand holes in the cover, the loaded body portion will also be held. 7 figures. C.J.W.

ROSENBERG, LEON J. Master shipping container. U. S. patent 2,617,524. Filed June 11, 1949. Issued Nov. 11, 1952. 3 claims. Assigned to Gaylord Container Corporation. [Cl. 206-65]

This patent relates to a paperboard container for shipping in stack formation a multiplicity of relatively small packages each containing a plurality of rayon yarn cones held upright in horizontally spaced relation. The container has an upwardly opening lower section and a downwardly opening upper section with their open ends in abutting relation. The construction of the container, without a liner, is described. 6 figures. C.J.W.

SEITH, THEODORE L. End-closing, top-opening shipping container. Canadian patent 487,763. Filed April 24, 1950. Issued Nov. 4, 1952. Assigned to Cornell Paperboard Products Co. 17 claims.

The construction of a container is described which is sealed at the ends but which has provisions for opening the top; it is used for the shipment of small parcels which are to be exposed simultaneously for marking and display. 10 figures. C.J.W.

TAGTSTROM, GILLIS J. T. Collapsible box. Canadian patent 487,375. Filed Nov. 19, 1949. Issued Oct. 21, 1952. 2 claims.

A collapsible container is formed of individual side walls, bottom, and top which are provided with mortises and tenons by means of which they can be connected to form a rigid assembly; external flexible straplike connecting elements can be used. 2 figures. C.J.W.

SHIPPING CONTAINERS—FROZEN FOODS

BELL, JOHN G. Container. Canadian patent 487,269. Filed April 28, 1950. Issued Oct. 14, 1952. 13 claims. Assigned to Morris Paper Mills.

A circular container for ice cream or other food products is so formed that it can be shipped and stored in knocked down condition and assembled without adhesives. It may be a multiwall container with insulating characteristics. 5 figures. C.J.W.

SHIPPING CONTAINERS—MULTIWALL BAGS

LINDA, FRANK R. Fungus inhibiting container for peat moss and the like. U. S. patent 2,615,614. Filed Aug. 25, 1948. Issued Oct. 28, 1952. 12 claims. Assigned to St. Regis Paper Company. [Cl. 229-55]

A multiwall paper bag for the shipment of peat moss and the like is impregnated with a suitable fungicidal agent, such as mercury compounds, chlorinated phenols, and metallic naphthenates. The bag is preferably made of wet-strength paper and at least the inner and outer plies are impregnated. The inner ply may be coated with polyethylene or impregnated with a wax composition containing the fungicidal agent. 12 figures. C.J.W.

SPENT SEMICHEMICAL LIQUOR

THOMSEN, ALFRED M. Methods of regenerating a spent cooking liquor resulting from the digestion of a cellulose-lignin complex. U. S. patent 2,618,610. Filed Sept. 2, 1947. Issued Nov. 18, 1952. 1 claim. [Cl. 252-183].

A method of recovering values from a neutral sulfite semichemical waste liquor is outlined. The liquor is saturated with carbon dioxide which precipitates the lignin; it is then saturated with sulfur dioxide, which precipitates further organic material; a portion of the filtrate is causticized to yield sodium hydroxide and calcium sulfite; the remainder is decomposed with sulfuric acid, liberating sulfur dioxide and giving a solution from which vanillin and acetic can be recovered; the residual liquor is then concentrated and calcined, giving calcium sulfate and soluble sodium sulfate. A flowsheet of the process is given. C.J.W.

STARCH

SCHOPMEYER, HERMAN H., and FELTON, GEORGE E. Starch products and method of making. Canadian patent 487,045. Filed Aug. 19, 1946. Issued Oct. 7, 1952. 7 claims. Assigned to American Maize-Products Company.

Waxy starch is treated with an active oxidizing agent at a pH substantially above 7 until the desired viscosity is obtained. The oxidizing agent may be sodium or potassium hypochlorite; the temperature should be from 80 to 110°F. and the pH from 7 to 11. The reaction time may vary from 0.5 to 2 hours. Other oxidizing agents mentioned are peroxides, permanganates, and the like. C.J.W.

SULFITE WASTE LIQUOR

SALVESEN, JÖRGEN R., BROWNING, WILLIAM C., and HARMON, CARLYLE. Lignin dispersing agents and method of making same. Canadian patent 487,084. Filed Nov. 18, 1949. Issued Oct. 7, 1952. 9 claims. Assigned to Marathon Corporation.

This corresponds to U. S. patent 2,491,832 (Dec. 20, 1949); *cf.* B.I.P.C. 20: 376-7. Spent sulfite liquor or basic calcium lignosulfonate is heated under pressure with sodium hydroxide at 140 to 170° and treated with air. The product is suitable for dispersing carbon black, clay, or zinc oxide. C.J.W.

SALVESEN, JÖRGEN R., and HARMON, CARLYLE. Lignin compounds and method for making same. Canadian patent 487,085. Filed Nov. 2, 1951. Issued Oct. 7, 1952. 7 claims. Assigned to Marathon Corporation.

This corresponds to U. S. patent 2,576,418 (Nov. 27, 1951); *cf.* B.I.P.C. 22: 384. It relates to the controlled alkaline hydrolysis of sodium lignosulfonate. C.J.W.

TALL OIL

FLOYD, DON E. Disproportionation of rosin acids and fatty acids. U. S. patent 2,617,792. Filed Sept. 5, 1950. Issued Nov. 11, 1952. 9 claims. Assigned to General Mills, Inc. [Cl. 260-97.5]

This corresponds to Canadian patent 485,460 (Aug. 5, 1952); *cf.* B.I.P.C. 23: 76. The method consists of heating tall oil or the rosin acid fraction of tall oil with a nickel catalyst in a carbon dioxide atmosphere for three hours at 250°C. The products are suitable as emulsion stabilizers. C.J.W.

GARVERICH, EDWIN S., and MARTIN, WILLIAM L. Detergent and process for making same. Canadian patent 487,092. Filed Nov. 9, 1943. Issued Oct. 7, 1952. 4 claims. Assigned to The Pennsylvania Salt Manufacturing Company.

This corresponds to U. S. patent 2,411,090 (Nov. 12, 1946). The detergent composition contains 5 to 25% of tall oil, 25 to 45% of a sodium silicate, 5% of an alkali phosphate, and 25 to 75% of bentonite. C.J.W.

MAHLER, PAUL. Composition of calcium salts of tall oil and a method of making it. U. S. patent 2,616,814. Filed Sept. 30, 1949. Issued Nov. 4, 1952. 2 claims. [Cl. 106-123]

A water-insoluble calcium soap in gel form, suitable for use as a film-forming composition, is obtained by heating a 20 to 80% (preferably 40%) solution of tall oil in mineral spirits at 65 or 70°C. and adding a fine slurry of hydrated lime in cold mineral spirits. The soap may be used with a pigment, an extender, additional solvent, or other material to form a coating composition, paint, or various types of plastics. C.J.W.

MARLING, PAUL E. Coating compositions. U. S. patent 2,617,776. Filed Oct. 25, 1948. Issued Nov. 11, 1952. 8 claims. Assigned to Monsanto Chemical Company. [Cl. 260-22]

A coating composition consists of 25 to 90% by weight of an alkyd resin having an acid number from 0 to 20 and 10 to 75% by weight of vinyl esters of tall oil. The alkyd resin is a condensation product of a drying-oil fatty acid, an aliphatic polyhydroxy alcohol, and a monomer of the group consisting of styrene, vinylbiphenyl, isopropenylbiphenyl, and α-methylstyrene. The invention is particularly directed to the preparation of transparent films but the products can be used in paint formulations. C.J.W.

MINICH, ARTHUR, and NOWAK, MILTON. Oil soluble gelling agent. U. S. patent 2,618,596. Filed June 7, 1950. Issued Nov. 18, 1952. 6 claims. Assigned to Nuodex Products Co., Inc. [Cl. 252-8.55]

A gelling agent for greases, lubricating oils, kerosene, and coating agents is formed from a mixture of 20 to 80% of tall oil and 80 to 20% of coconut fatty acids by treatment with aluminum sulfate. In an example 500 grams of a mixture of 50% tall oil (acid number 186) and 50% coconut oil fatty acids (acid number 262) in five liters of water containing 120 grams of sodium hydroxide is slowly treated with 308 grams of aluminum sulfate in 600 cc. of water; the resulting precipitate is washed with 1000 cc. of water, broken into small pieces, and dried at 130°F. for 16 hours. The aluminum soap of either coconut fatty acids or tall oil is not a gelling agent. A dihydroxy aluminum soap results from 250 grams of the tall oil and coconut fatty acids and 308 grams of aluminum sulfate. C.J.W.

SNELLING, WALTER O. Recovery of valuable products from pentaerythritol mother liquor. U. S. patent 2,617,791. Filed Sept. 15, 1949. Issued Nov. 11, 1952. 5 claims. Assigned to Trojan Powder Company. [Cl. 260-97.5]

The mother liquor from the crystallization of pentaerythritol contains, on an average, 50% water, 14% metal formates, 11% pentaerythritol, dipentaerythritol, and other polymers, and 25% of other compounds. The compounds containing hydroxyl groups can be recovered by esterification with higher fatty acids, their source being soybean, linseed, cottonseed, or tall oil; the last being preferred. In an example 1230 grams of the residue (615 grams solids) and 1510 grams of tall oil were heated for various times at 230°C. The esters are useful in varnish making, in printing ink compositions, in the cement material used in bonding cork in linoleum and, in general, as a substitute for the conventional drying oils. C.J.W.

TEXTILE INDUSTRY AND FABRICS—WATERPROOFING

MINOR, FRANCIS W., SOOKNE, ARNOLD M., HARRIS, MILTON, and PYLE, GRAY L. Method and composition for imparting water resistance to textile material. U. S. patent 2,615,824. Filed Feb. 17, 1948. Issued Oct. 28, 1952. 4 claims. Assigned to the United States of America as represented by the Secretary of the Army. [Cl. 117-161]

Textiles can be waterproofed by treatment with a solution of monomethyldichlorosilane in carbon tetrachloride. The hydrochloric acid formed in the reaction is removed by treatment with a dilute alkali. C.J.W.

VANILLIN

PEARL, IRWIN A. Production of vanillic acid. Canadian patent 487,111. Filed June 26, 1948. Issued Oct. 7, 1952. 3 claims. Assigned to Sulphite Products Corporation.

This corresponds to U. S. patent 2,446,606 (Aug. 10, 1948); *cf.* B.I.P.C. 19: 70. It relates to the oxidation of the silver residue from the silver oxide oxidation of vanillin and the re-use of the regenerated silver oxide. C.J.W.

Book Reviews

CARPENTER, CHARLES H., and LENEY, LAWRENCE. 382 photomicrographs of 91 paper-making fibers. [Rev. ed.] Syracuse, State University of New York, College of Forestry, 1952. 152 p.

The revision of Carpenter's "Atlas of paper-making fibres" once again makes available to pulp and paper technologists this invaluable aid in identifying cell constituents of pulp, paper, and paperboard. Most of the original photomicrographs have been retained but the reproduction has been enhanced by the use of collotype. Thirty-five additional fiber types have been included so that now 34 softwood, 35 hardwood, and 16 miscellaneous plant species, as well as wool, silk, rayon, nylon, and asbestos fibers, are represented. The user who wonders at the inclusion of black walnut but the omission of Virginia and pond pines, will be cheered when he finds those deans of the industry, black and white spruces, included. There is no royal road to fiber identification; however, this handy, flat-opening, loose-leaf atlas smooths the corners of some of the stumbling blocks. I. H. ISENBERG

VENKATARAMAN, K. The chemistry of synthetic dyes. New York, Academic Press, Inc., 1952. v. 2. p. 705-1442; *cf.* B.I.P.C. 22: 474.

This volume includes chapters dealing with dyes of the following classifications: di- and triphenylmethanes; xanthenes and acridines; azines, oxazines, and thiazines; benzophenone, benzoquinone, and naphthoquinones; anthraquinone dyes for cellulose acetate; anthraquinone mordant dyes; acid anthraquinone dyes; anthraquinone vat dyes and their derivatives; indigoid and thioindigoid dyes; solubilized vat dyes; sulfur dyes and sulfurized vat dyes; phthalocyanines and cyanines; and miscellaneous dyes. In addition, there are chapters dealing with the action of light on dyes and dyed fibers, the chemical constitution of dyes in relation to cellulose and wool, and the identification, analysis, and evaluation of dyes. These three closing chapters contain much of interest. One criticism of the first volume was the poor coverage on cellulose and fiber structure—this will be found in Volume II. The section on chromatography contains valuable information hereto scattered in the literature. The author has collected it in one well-written section, which will be of interest to users of chromatographic technics and to students of chromatography. Volumes I and II will provide valuable reference material for libraries, dyestuff chemists, and those interested in the properties of complex aromatic molecules. The reviewer finds the references not always easy to follow; he prefers them in numerical order at the end of each chapter.
H. F. LEWIS

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